

ELEMENTS OF MUSIC

CHAPTER I.

NOTES. CLEFS. LEGER LINES.

1. Musical sounds differ from one another in **Pitch**. By the *Pitch* of a sound we mean whether it is high or low.

2. As regards pitch, musical sounds are named after the first seven letters of the alphabet—

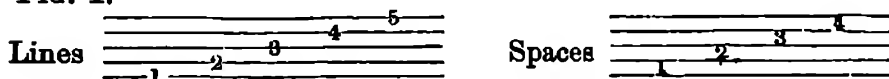
A, B, C, D, E, F, G.

3. These seven sounds follow each other in *ascending* order of pitch, and if we take an *eighth* note in the same order it is so related to the first (A) that it receives the same name. As it is the *eighth* note from the first, it is called the *octave*¹ of the first (from the Latin word *octavus* = *eighth*).

4. Musical Sounds are represented by characters called **Notes**, which are written on, and in the spaces between, a series of five parallel lines called a **Stave** (or *Staff*).

Both *lines* and *spaces* are counted upwards. (Fig. 1.)

FIG. 1.

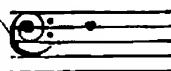


5. To determine the *name* and *pitch* of notes written on staves, signs called **Clefs** are used.

The two chief clefs are the **G clef** or *Treble clef*.



and the **F clef** or *Bass clef*.



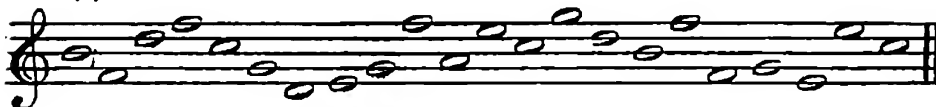
It will be seen that the **G clef** crosses the *second* line four times. It is said to stand on the *second* line, to which it gives the name G.

¹ It will be seen presently that the term *octave* is also applied to the whole series of eight notes in alphabetical order. (§ 25.)

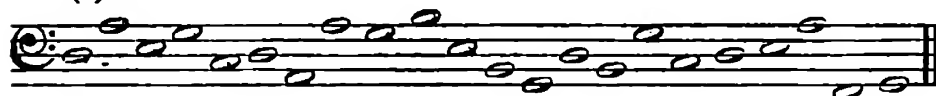
EXERCISES.

Copy out the following and write underneath each note its alphabetical name.

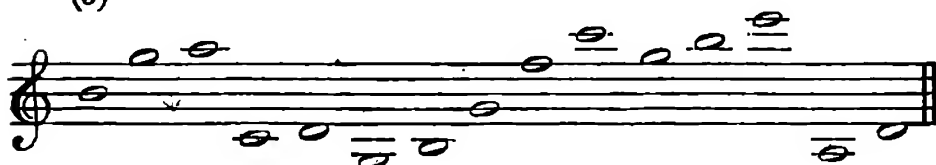
(1)



(2)



(3)



(4)



CHAPTER II.

THE ALTO AND TENOR CLEFS. THE GREAT STAVE.

10. If we place the *treble stave* above the *bass stave* we get the double stave used for pianoforte music.

FIG. 6.



11. Let us examine this pair of staves. The note below the treble stave is D; the note above the bass stave is B. There is then *one step* from the bass to the treble stave, and this can be filled up by using a *leger* line, the name of which will evidently be C.



12. We shall now be able to get a continuous series of notes beginning in the bass and continuing without break through the treble.



It will now be easy to specify more definitely the exact pitch of a note.

13. The note C written on the leger line *between the treble and bass staves* is called **Middle C**.

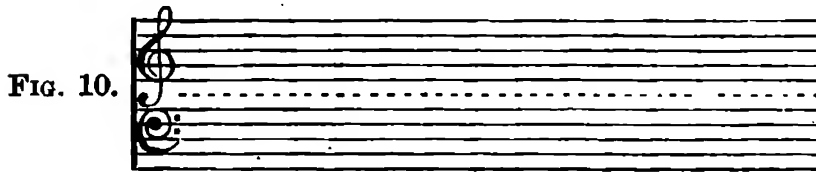
On a piano *Middle C* stands, roughly speaking, in the middle of the instrument; on a violin it is the C played in the first position by the third finger on the fourth string.

This *Middle C* is of great importance for reference, and the student should thoroughly understand its position on the double stave, on the treble stave, and on the bass stave. Thus the following are different ways of representing the same note:





14. When the treble and bass staves standing over each other are joined by a continued leger line, we get a stave of

eleven lines. This is useful for reference and is called the **Great Stave of eleven lines** (v. § 245).



15. The treble and bass staves are merely sections of the *Great Stave*.

16. In order to avoid the use of a large number of ledger lines other sets of five lines from the Great Stave are used.

To show this another clef, called the **C clef**, is used,  or . It always denotes the **Middle C**.

17. The five lines of the new stave may be made up in different ways.

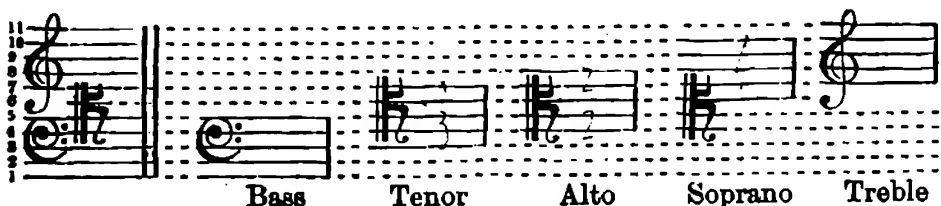
Thus we may take *middle C* with two lines above (from the treble) and two below (from the bass). This stave is called the **Alto Stave**.

Or we may take *middle C* with one above and three below. This is called the **Tenor Stave**.

Or we may take *middle C* with four above, and this is called the **Soprano Stave**.

18. The relative position of all the staves will be seen from the Great Stave of eleven lines :

FIG. 11.



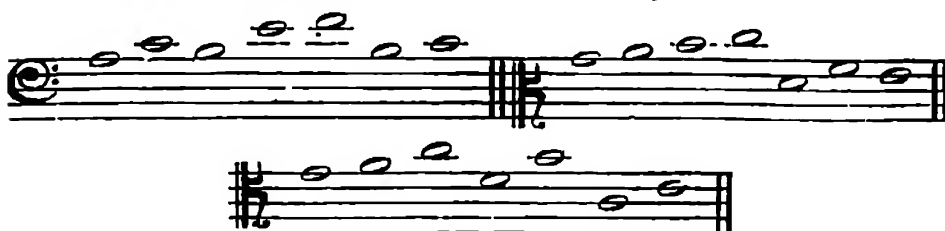
19. Two of these staves with the *C clef* are so important that we shall take them separately.

EXERCISE.

1. Rewrite the following, without altering the pitch, in the *bass clef*:



2. Rewrite the following in the *treble clef*:



3. Rewrite the following in the *alto clef*; and in the *tenor clef*:













CHAPTER III.

ORIGIN OF THE FORM OF CLEFS. USE OF CLEFS. OCTAVES.

21. The signs used for the G, F, and C clefs are merely corruptions of old forms of the letters G, F, and C. Thus, all the following shapes (with many others) are found in old music:

(a) G clef  i.e. .

(b) F clef     i.e. .

(c) C clef     i.e. .

22. In writing for voices the *soprano* (highest voice of women), *alto*¹ (lowest voice of women), *tenor* (highest voice of men), and *bass* (lowest voice of men), were formerly indicated by the clefs bearing those names. Now² the treble *G* clef is used for soprano, alto, and tenor, and the *bass* clef for the bass. The *tenor* part, however, is written an *octave higher* than it is sung, and this is shown by writing *octave lower* (8ve lower) at the beginning of the tenor part.

The following extract from Handel's "Judas Maccabæus" will illustrate this: (a) is taken from an old edition; (b) is the same from a modern edition.

FIG. 14.

(a)

SOPRANO

ALTO

TENOR

BASS

(b)

Treble.

Alto.

Tenor
(8ve lower).

Bass.

¹ The word *alto* really means *high*. Formerly this part was always sung by men (and it is still in most cathedral choirs), and so it meant the *highest* voice of men. It was also called *counter-tenor*. In modern music the part is sung by women, and is often called *contralto* (v. § 246).

² I.e. in England. In German editions of full scores the old clefs are still used for the four voices.

23. In music for *piano*, *organ*, &c., the *treble clef* is used for the higher notes, usually played with the right hand; the *bass clef* is used for the lower notes, played with the left hand.

The *treble clef* is further used for the *violin*, and for wind instruments of similar pitch, viz. *piccolo*, *flute*, *oboe*, *clarinet*, *cornet*, &c.

The *alto clef* is used for the *viola*,¹ and the *alto trombone*.

The *tenor clef* is used for the *tenor trombone*, and for the higher notes of the *violoncello*.

The *bass clef* is used for the *violoncello*, and *double bass*, and also for wind instruments of similar pitch, viz. *bassoon*, *bass trombone*, &c.

24. We have seen in Fig. 8 that there are several sets of notes (C, D, E, F, G, A, B) called *octaves*. It is convenient to give different names to the different octaves.

25. The octave beginning with the C on the second leger line below the bass is called the **Great Octave**. The next octave is called the **Small Octave**. That beginning with middle C is called the **Once-marked Octave**. That beginning with the C in the third space of the treble staff is called the **Twice-marked Octave**.

Note that each C begins a fresh octave.

FIG. 15.

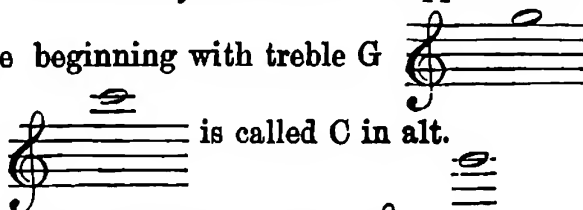
Great 8ve. Small 8ve. Once-marked 8ve. Twice-marked 8ve.



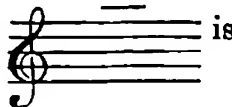
26. Another method is commonly used for the upper notes.

The notes of the octave beginning with treble G

are called in *alt*. Thus



27. The octave above this, beginning with

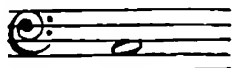


¹ The *viola* is often called the *tenor violin*, but it plays from the *alto clef*.

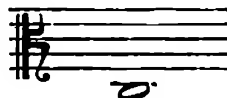
28. Two other names should be noted : the middle C (§ 13)



and the tenor C one octave below this :



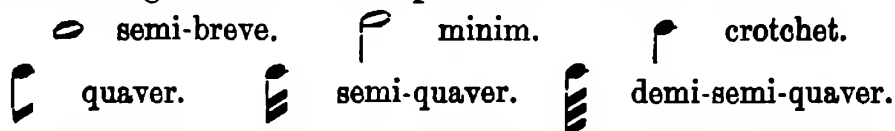
or



CHAPTER IV.

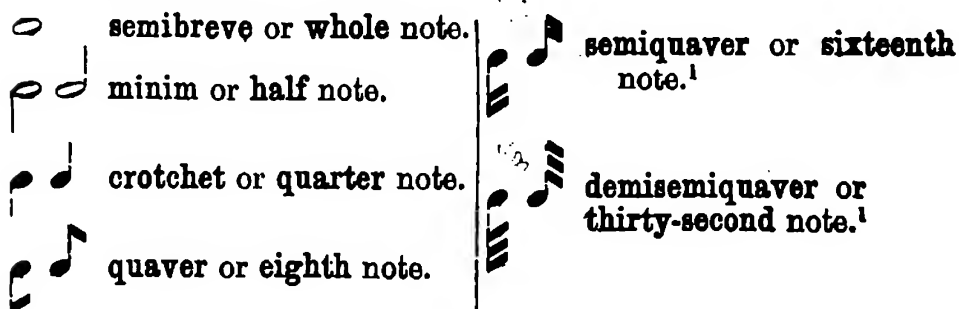
SHAPE AND LENGTH OF NOTES.

29. The relative duration of notes is indicated by their shape. The following are the chief shapes used in modern music :



The *semibreve* is an open note ; the *minim* is an open note with a stem ; the *crotchet* is a black note with a stem ; the *quaver* is a black note and its stem has a hook, while the *semiquaver* has two hooks, and *demisemiquaver* three.

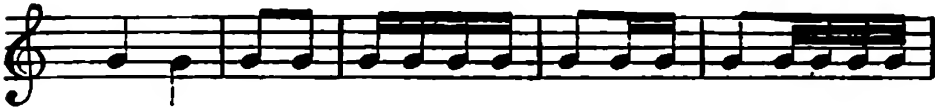
30. In modern music the *semibreve* is taken as the standard, and in Germany it is therefore called the *whole note*. In the list below each note is equal in duration to two of that which follows. Thus, 1 semi-breve = 2 minims ; 1 minim = 2 crotchets, &c. This will best be seen from the German names in the following table :



¹ Semi- and demi- both mean half.

31. Stems may be turned up or down. When several *hooked* notes occur together they may be written in groups.

FIG. 16.



32. A dot placed after a note makes it half as long again.

Thus $P^{\cdot} = P P$ or $P P P$.

A second dot adds half the value of the first dot. Thus:

$P^{\cdot\cdot} = P P P$.

33. Instead of using dots to increase the length of notes, a sign called a *tie*¹ (—) may be used. The *tie* indicates that the sound is to be continued for the total length of the notes joined.

Thus: $\overbrace{P P}^{\text{tie}}$ or $\overbrace{P P}^{\text{tie}}$ or $\overbrace{P P P}^{\text{tie}}$.

¹ is placed by the bar and a tie sign

34. **Rests** are signs used to denote periods of *silence* in music. Each note shown above has a corresponding rest.

FIG. 17.

Semibreve rest.	Minim rest.	Crotchet rest.	Quaver rest.	Semiquaver rest.	Demisemi- quaver rest.
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The *semibreve* and *minim* rests are alike in shape, but the *longer* rest hangs from the *higher* line, the *shorter* lies on the *lower* line. The *crotchet* and *quaver* rests are alike in shape, but the *longer* rest turns to the *right*, the *shorter* to the *left*. The *semiquaver* and *demisemiquaver* are easily distinguished by their hooks.

35. Owing to the similarity of the *crotchet* and *quaver* rests a new *crotchet* rest (written ζ) is now very generally used.

¹ Other uses of this sign will be shown later (§ 215).

86. Dots may be added to rests with just the same effect as when used with notes. Thus : $\text{r.} = \text{r} \text{ } \text{r}$

Except in certain cases, explained later (§ 72), dotted rests are not much used.

NOTE TO CHAPTER IV.






87. A note called a *breve*, equal to two semibreves, is occasionally used in Church music.

In instrumental music a *semi-demi-semi-quaver*,¹ equal in value to half a demisemiquaver, is sometimes used. These notes with their corresponding rests are shown below.

FIG. 18.






38. In ancient music the following notes were used:




Maxima or *Large*  ; **Longa** or *Long*  ; **Brevis** or *Short*  ;
Semibrevis or *Half-short*  ; and **Minima** or *Smallest* .

Thus what was originally the *short* note (the *breve*) has in modern music become the longest note used, and other shapes and names have been invented to indicate the shorter notes.

EXERCISE.

1. What single note is equal to 8 quavers; to 4 quavers; to 4 crotchets; to 8 semiquavers?

2. Express the following in *quavers*:—(a) ; (b) ;
 (c) .

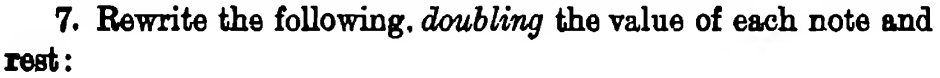
3. Express the following in *semiquavers*:—(a) ; (b) ;
 (c) .

¹ Occasionally in instrumental music a note with *five* hooks (half the length of the semi demi-semi-quaver) is found. *Vide* Beethoven's Piano Sonatas, No. 26, Andante Espressivo.

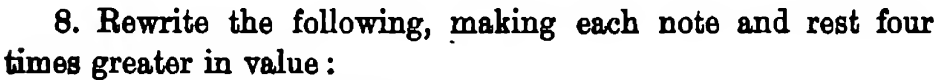
5. Write the *rests* corresponding to the following without

6. Rewrite the following, *halving* the value of each note and rest:

6. Rewrite the following, *halving* the value of each note and rest:



7. Rewrite the following, *doubling* the value of each note and rest:



8. Rewrite the following, making each note and rest four times greater in value :



ACCENT AND TIME.

Down the hill-side tripped the maiden,
where the syllables in thick type are accented.

FIG. 19. 


FIG. 19.

Down the hill-side tripped the mai-den.

41. In music the **accented note** is shown by placing *before it* an upright line called a **bar** or **bar-line**. Thus the above would be shown as follows :



Note: When the *first* note is accented the bar-line for that note is omitted.

42. The sign  is called a **Double-bar**. It has nothing to do with accent; it merely indicates the end of a piece or of a section.

43. In the next example the first note is unaccented; the bar-lines would then stand as shown.



44. It will be seen that the **accent** divides the notes into equal *sets*. These equal groups or sets are called **Bars¹** or **Measures**. Thus the notes between any two bar-lines form a *bar* or *measure*.

45. Every bar can be divided into a certain number of equal lengths, called **Beats**.

Thus in (a) there are *two* beats; in (b) *three* beats.



46. In dividing bars into beats the following points must be kept in mind :

(1) The beats in each bar may be subdivided into notes of smaller value, or one note may be sustained for two or more beats. This, however, does not alter the *number of the beats*.

¹ Notice that the word *bar* is applied both to the upright line and to the contents of the measure.

FIG. 23.



Here each beat equals *one* crotchet, but in (a) some of the beats are divided into four semiquavers; others into two quavers. In (b) some of the notes are held for two beats (*i.e.* one minim).

(2) The unit note may be of any value without altering the number of beats. In (a) fig. 24 each beat = one *crotchet*; in (b) one *quaver*; in (c) one *minim*; but in each case there are *three* beats in a bar.

FIG. 24.



(3) Rests may make up some of the beats.

FIG. 25.



(4) If the first bar is incomplete the last bar of the section must also be incomplete, so that the first and last incomplete bars make up a complete bar. The bars marked (a) and (b) together make a complete bar. If the first bar is complete the last bar must also be complete. In both these cases rests must be added to the last bar if necessary to make up the completeness.

FIG. 26.



47. **Time** is the grouping of notes into regular sets by means of accents.

Time depends upon the number of beats in a bar.

When there are two beats in a bar it is called **Duple** time.

When there are three beats in a bar it is **Triple** time.

When they are four beats in a bar it is **Quadruple** time.

48. Very often the term *Common Time* is applied to all music having an even number of beats, but as the term *common* is still more frequently applied to one special time (§ 59), it seems better to use the terms *duple*, *quadruple*, &c.

49. Time is further subdivided into **Simple** and **Compound**.

When the value of each beat is equal to a simple undotted note the time is said to be **simple**.


When the value of each beat is equal to a dotted note the time is said to be **compound** (v. § 247). 

FIG. 27.

(a)






(b)



Both of these are duple time, because there are *two beats* in a bar.

In (a) each beat is equal to a crotchet, therefore (a) is **simple duple**.

In (b) each beat is equal to a dotted crotchet ( or  or ) therefore (b) is **compound duple**.

Similarly (c) is **simple triple**; (d) is **compound triple**.

FIG. 28.

(c)



(d)



4. Correct, by adding rests or lengthening the notes, the bars marked *. [*Vide* § 46 (4).]

(a)



(b)




CHAPTER VI.






TIME-SIGNATURES.

50. The time used in a piece of music is shown by a sign called the **time-signature**, which is placed at the beginning of a piece immediately after what is called the *key-signature* (explained in Chapter X.).

51. The time-signature shows the time-value of one bar. It is most conveniently written as a *vulgar fraction*, on the understanding that a **semibreve**=1.

Thus a *minim* is the *half* of a semibreve: therefore if each beat equals *one minim* we say that each bar contains so many *halves* of a semibreve. Two minims in a bar= $\frac{2}{2}$; three minims= $\frac{3}{2}$, &c. Similarly, as a crotchet= $\frac{1}{2}$ of a semibreve, two crotchets in a bar= $\frac{2}{4}$; three crotchets= $\frac{3}{4}$, &c.

52. When each beat =  the lower figure is 2

"	"	"	=		"	"	4	These figures show what fraction of a semibreve each beat is (v. § 80).
"	"	"	=		"	"	8	
"	"	"	=		"	"	16	
"	"	"	=		"	"	32	
"	"	"	=		"	"		

53. To find out the upper figure of the time-signature we must distinguish carefully between *simple* and *compound* time (§ 49).

54. When the time is **simple**¹ the *upper* figure shows the *number of beats in each bar*; the *lower* figure shows the *value* of each beat.

Thus in *duple* time we should write $\frac{2}{2}$, $\frac{2}{4}$, or $\frac{2}{8}$ according as each beat is worth a *minim*, a *crotchet*, or a *quaver*.

Triple time would similarly be $\frac{3}{2}$, $\frac{3}{4}$, $\frac{3}{8}$, &c.

55. In **compound** time the *upper* figure does *not* show the number of beats. The lower figure shows the kind of note which equals one-third of the beat; the upper figure shows how many of such notes make up a bar.

Thus in *compound duple*, when the beat = P^\bullet or $\text{P}^\bullet\text{P}^\bullet\text{P}^\bullet$, the lower figure will be 8, denoting quavers; the upper figure will be 6: *i.e.*

$$\left| \text{P}^\bullet \text{P}^\bullet \right| = \frac{6}{8}.$$

If each beat = P^\bullet we should get

$$\left| \text{P}^\bullet \text{P}^\bullet \right| = \frac{6}{4}.$$

56. If we wish to find out what *compound* time corresponds to a given *simple* time we proceed as follows: Suppose the given simple time is $\frac{3}{4}$; it means there are *three* beats of one crotchet each. The corresponding compound time would have *three* beats of one dotted crotchet (= three quavers) each. Therefore each bar would contain nine quavers, and the signature would be $\frac{9}{8}$. This gives us the rule: multiply the upper number by 3 and the lower by 2. $\frac{3}{4} \times \frac{3}{2} = \frac{9}{8}$.

57. When the number of notes in a bar is 6 or 12, we must notice carefully how they are accented.

FIG. 29.



¹ There are occasional exceptions to the rule in the case of $\frac{2}{2}$ time. Thus, in Mendelssohn's 'I waited for the Lord' there are *four* distinct beats of *one* quaver each: its signature ought to be $\frac{4}{8}$; but this signature is not often used. So we find $\frac{2}{2}$ in its place.

We may accent this passage with *three* beats in a bar, each beat = ♩ when it is clearly simple time $\frac{3}{4}$ (a). Or we may have two beats in a bar, each beat = ♩• when it is compound time $\frac{6}{8}$ (b).

FIG. 30.



58. Besides the fractional time-signatures two other signs are used: C and C♩.

59. C means four crotchets in a bar, and therefore is just the same as $\frac{4}{4}$. It is frequently called **common time**—a term which therefore means four crotchets in a bar (§ 48).


















Formerly *triple* time was called *perfect* time, and was indicated by a circle, O. Time with an even number of beats was then called *imperfect*, and was indicated by an imperfect circle C, which has since become the letter C.

60. C♩ is called **Alla Breve**¹ time (or better, *Tempo a Cappella*, from the fact that it is much used in church [=cappella] music). It means two minims in a bar ($\frac{2}{2}$) with two beats in a bar.

The sign C♩ is very frequently used in the final section of a chorus which begins in C time (with *four* beats and *two* accents), and which changes to C♩ (with *two* beats and *one* accent). It generally implies an increase in the pace of the movement, and sometimes the words **Doppio movimento** (=double the pace) are added. This means that the section marked C♩ is to be twice as fast as that marked C: i.e. the *beat* remains the same, but a *minim* (=one beat) of the section marked *Doppio movimento* occupies just the same time as a *crotchet* (=one beat) in the section marked C. See Mendelssohn's "Elijah," last chorus.

¹ The term *alla breve* is commonly applied to $\frac{2}{2}$ or C♩ time, but this is nevertheless quite an error. *Alla breve* really means *breve* time, i.e. where each bar = four minims or one breve, i.e. $\frac{4}{2}$; sometimes the sign C♩ is used instead of the signature $\frac{4}{2}$.

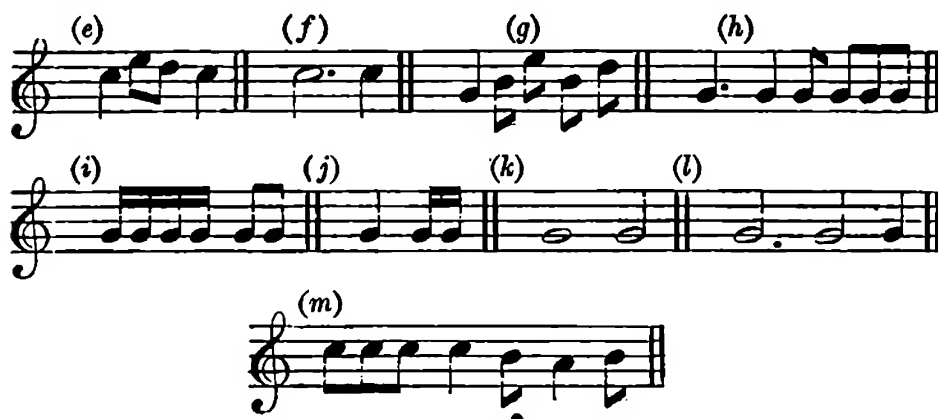
Table of Time-signatures.

	SIMPLE	COMPOUND
DUPLE	C or $\frac{2}{2}$  $\frac{2}{4}$  $\frac{2}{8}$ 	$\frac{6}{4}$  $\frac{6}{8}$  $\frac{6}{16}$ 
QUADRUPLER	$\frac{4}{2}$  C or $\frac{4}{4}$  <i>See p. 19, footnote</i>	$\frac{12}{4}$  $\frac{12}{8}$  $\frac{12}{16}$ 
TRIPLE	$\frac{3}{2}$  $\frac{3}{4}$  $\frac{3}{8}$ 	$\frac{9}{4}$  $\frac{9}{8}$  $\frac{9}{16}$ 

EXERCISES.

1. Add time-signatures to the following, stating whether they are simple or compound:





2. Complete each of the following bars by adding *one* note at the end :



3. Add bars to each of the following according to the time-signature. Each begins on the first beat of a bar :



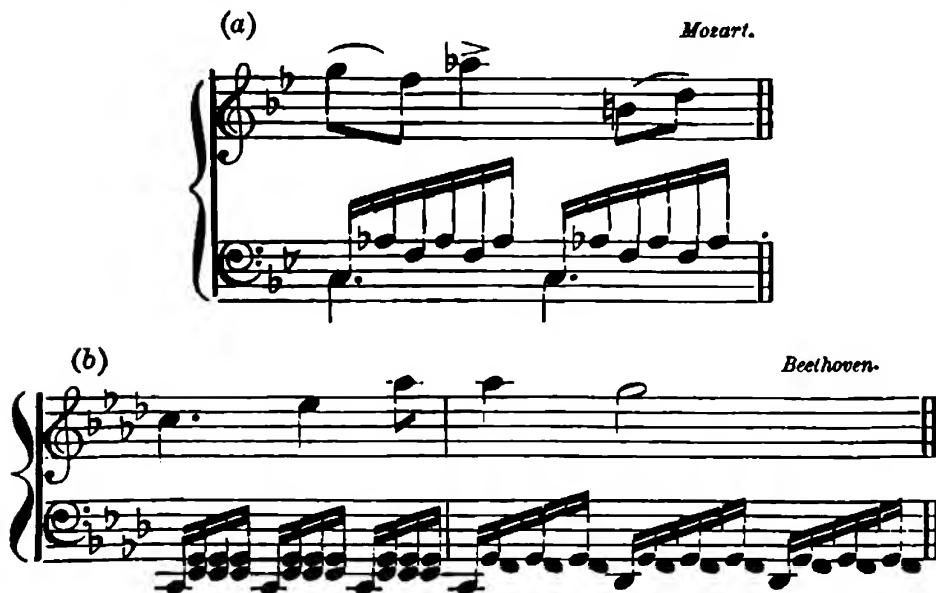
4. Bar the following notes in as many different ways as you can, adding time-signature in each case :



5. Add bar-lines and time-signatures to the following :

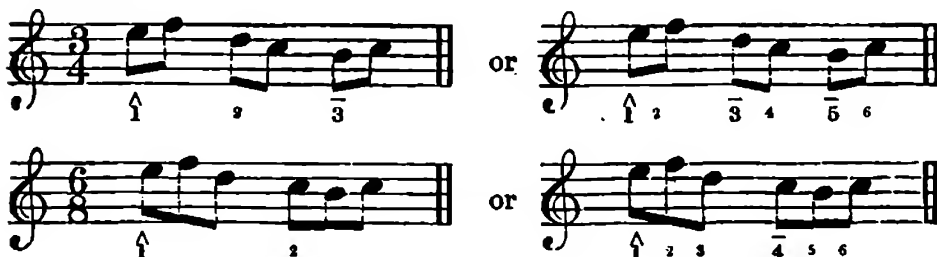


6. State exactly the time-signature of the following, giving your reasons :



64. In Counting time we count *one* for each *beat*. If, however, the pace is slow, we may consider each beat subdivided, e.g. a crotchet into two quavers, a dotted crotchet into three quavers, &c.

FIG. 31.



65. In counting a half beat it is convenient to use the word "and," thus :

FIG. 32.



66. **Beating time.** When a number of persons are performing music together, a conductor "beats the time," i.e. marks the beats, or the divisions of the beats, with a *bâton*. There are many ways of doing this, the following being one of the commonest. The strong accent is shown by the thick type, the secondary accent by capitals. For *duple time*, **Down-up** ; for *triple time*, **Down-left-UP** ; for *quadruple time*, **Down-left-RIGHT-up**.

67. When the music is slow it is sometimes necessary to divide the beats. This is done by beating twice (or, in compound time, three times) in each direction ; thus for *simple triple time* : **Down-down-LEFT-left-UP-up**. $\frac{6}{8}$ time is often beaten **Down-left-left-RIGHT-right-up**.

The Use of Rests.

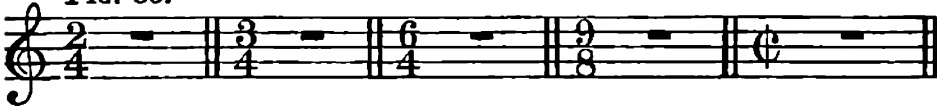
68. The sign for a *whole bar's rest* in any kind of time¹ is the *semibreve rest*.

¹ Except in $\frac{4}{2}$ time, where the breve rest is used (note.)



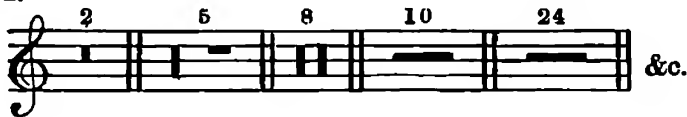
(v. p. 20)

FIG. 33.



69. In expressing a rest which lasts through several bars, the *breve* rest is used to mean *two* bars' rest. This may be doubled in length (when it means *four* bars' rest) or combined with the semibreve rest. In all cases it is usual to write the number of bars over the sign. Very often, especially when the number of bars' rest is great, a long stroke is drawn, and the number of bars' rest written above it.

FIG. 34.



70. In writing rests, care should be taken to show that *each beat* is complete in itself. Thus, the following are *incorrect* :—

FIG. 35.



At (a) and (b) each beat equals a crotchet, and therefore a minim rest cannot be used. At (c) each beat is a dotted crotchet, and the first beat must be shown by adding a quaver rest, letting a crotchet rest and the quaver make up the second beat. Corrected, these examples would stand as below :—

FIG. 36.



71. In quadruple time a minim rest may be used to denote half a bar's rest, *provided it occurs at the beginning or end of the bar*, and not in the middle. Thus :—

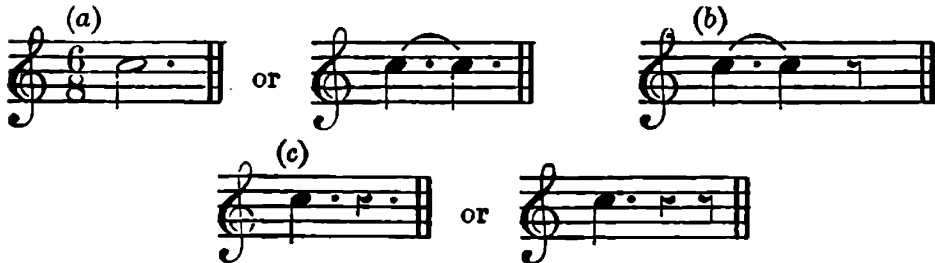
FIG. 37.



✓ 72. In *compound time*, a sound which occupies a whole bar may be written as one note (a). In all other cases the notes must be grouped so as to indicate the *beats* (b).

Since the beat in compound time always equals a dotted note, it is clear that a *dotted rest* corresponds to a beat. Dotted rests may, therefore, be used in compound time. (c) (§ 36).

FIG. 38.



The bar (b) could not be written  because that does not show the beats.

EXERCISES.

1. Write a bar of music in common time and one in $\frac{9}{8}$ time, and mark the accents in each case.

2. Express by means of the breve and semibreve rests a rest for seven bars; for six bars; for ten bars. Express in any way you like a rest of thirty bars.

3. Correct the rests used in the following example, giving reasons:



4. How ought the following notes and rests to be written to be in strict accordance with a time-signature?



5. In what kind of time is the *minim* rest unavailable?

CHAPTER VIII.

TRIPLETS. SYNCOPATION.

73. Three notes played in the time of two form a triplet.

FIG. 39.



Here the second half of the second bar is equal to *two* crotchets. *Three* are put in place of the *two*, and the figure 3 is added to make this clear.

Rests may form part of a triplet, or two notes of the triplet may be sustained and written as one note (v. § 249).

FIG. 40.



When several sets of triplets follow each other, very often only the first set has the sign $\overbrace{3}$, the grouping being sufficient to indicate the meaning in the other cases.

74. Sometimes in compound time a beat (which is usually divided into *three*) is divided into *two*; thus *two* notes are played in the time of *three*. This is shown by the figure 2. The group is called a *duplet*, or, where *four* are written for *six*, a *quadruplet*.

FIG. 41.



75. A beat or part of a beat may be divided into any irregular number of notes. The number in a set is shown as in the case of the triplet. The terms **Quintuplet** (*i.e.* group of *five* notes), **Sextuplet** (*six* notes), &c., are used.

FIG. 42.

Beethoven.

(a)



(b)



At (a) the fourth beat has five semiquavers instead of four ; at (b) the first beat (four quavers in a bar : *v. § 54, note*) has twelve semidemisemiquavers instead of eight ; the first half of the second beat has six instead of four ; the last half of the last beat has seven instead of four.

76. The use of the triplet is practically confined to simple time, where a few beats are divided into three instead of into two. But sometimes a movement in simple time has triplets throughout, so that the effect is just the same as if written in compound time. The following from Mozart is of that kind :

FIG. 43.



This might clearly be written in $\frac{9}{8}$ time, when each beat would be a dotted crotchet. The treble would stand as below :

FIG. 44.



77. Music which is written in *simple* time may also be expressed in *compound* time, and *vice versa*.

For example, rewrite the following passage in $\frac{2}{4}$ time:

FIG. 45.



We have to produce the same effect in $\frac{2}{4}$ time. This will be done by representing a beat of $\frac{6}{8}$ time by a beat of $\frac{2}{4}$ time, and by indicating where necessary the subdivision of the beats.

In $\frac{6}{8}$ time a beat = ♩^\cdot ; in $\frac{2}{4}$ time a beat = ♩ ; each *dotted crotchet* (i.e. $\frac{6}{8}$) will therefore be represented by a crotchet (i.e. $\frac{2}{4}$). In bars two and three the beats are divided into *three* parts. In $\frac{2}{4}$ time a beat is usually divided into two parts, and it can only be divided into three by writing the notes as triplets. The passage then would stand as follows:

FIG. 46.



78. Sometimes a double time-signature is used, e.g. $\frac{6}{8} \frac{2}{4}$. This means that some parts of the movement are in $\frac{6}{8}$ time; others in $\frac{2}{4}$ time.

79. **Syncopation.**—When a note is begun on an *unaccented* beat and continued over an *accented* beat, the accent is given to the beginning of the note. This is called **Syncopation**.

FIG. 47.



80. When a note begins in one bar and is *continued* into the next, a tied note must always be used (a). Formerly this was not the rule. Such a note used to be written *on* the bar line as at (a) below; or with a dot placed at the beginning of a bar (b).

FIG. 48.



81. When a note begins on the *half* beat (§ 62), and is continued over the next beat, there is syncopation.

FIG. 49.



82. Syncopated notes are always played with an increased emphasis, and this is very often indicated by the signs $>$ or — or *sf*. (*Vide* § 239.)

83. An effect very similar to syncopation is produced when an unaccented beat receives a special emphasis, although the note is not prolonged.

This is usually indicated by the signs $>$, &c. ; but sometimes, as at (a), the grouping of the notes by means of slurs alone shows that the accent is displaced :

FIG. 50.



84. We have seen (§ 47) that time depends on the **regular recurrence of accents**, and also that sometimes the accent is taken from its usual place and given to a beat usually unaccented.

Now if the **displaced accent** is made to recur regularly, the effect will sound like a change of time.

FIG. 51.



This example is in $\frac{3}{4}$ time, but in the third bar the accent is given to the second beat and then it is made to *recur on every other beat*. The part in brackets is therefore practically in $\frac{2}{4}$ time.

85. Changes of time like this are usually indicated by signs like $>$, &c., but very often the grouping of the notes by means of slurs is sufficient. Occasionally the same effect is produced by means of rests, as in the following example from Schumann's Pianoforte Concerto.

FIG. 52.



If the student will play this carefully he will find that the notes group themselves as regards accent in the way indicated. Each beat is clearly equal to two crotchets, and the strong accent occurs on every third beat. The time is then three beats of two crotchets (= one minim), or $\frac{3}{2}$ as shown below.

FIG. 53.



86. As a rule such changes of time occur (though this is not so in the above example) when several parts are being performed together. Then one part changes its time while the original time is kept up by the remainder. We thus get two different kinds of time played together : *e.g.*

FIG. 54.

F. Chopin. Op. 42.



Here the bass is clearly in $\frac{3}{4}$ time. But the upper stems of the right hand show that the melody has two *dotted crotchets* to the bar—i.e. the melody is in $\frac{6}{8}$ time.

87. Cases of the alternation of different kinds of time are not infrequent.

Brahms has written variations on a Hungarian song which consists of bars in $\frac{3}{4}$ and $\frac{4}{4}$ time alternately. The slow movement of Chopin's Sonata, Op. 4, is in $\frac{5}{4}$ time (*i.e.* five crotchets in a bar), with the first and third beat accented. This is equivalent to bars of $\frac{2}{4}$ and $\frac{3}{4}$ combined.

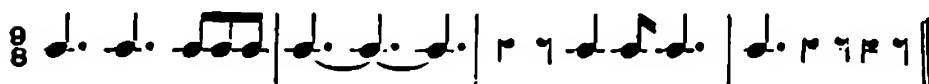
Schumann (*Carneval*) interpolates a single bar of $\frac{4}{4}$ time in a piece which is in $\frac{3}{4}$ time. Such an interpolation is usually a question of rhythm, and the subject is best studied under that head.

These various methods of changing the time in a movement prevent monotony and add to the interest.

EXERCISES.

1. Write examples of triplets in $\frac{2}{4}$ time and $\frac{3}{8}$ time.

2. Rewrite the following in $\frac{3}{4}$ time :



3. (a) In the following extract (from S. Heller), what other time-signature might be used, and what trifling alteration would then be necessary to make it strictly correct? (b) As it now stands, what is omitted which would have made the meaning clearer?

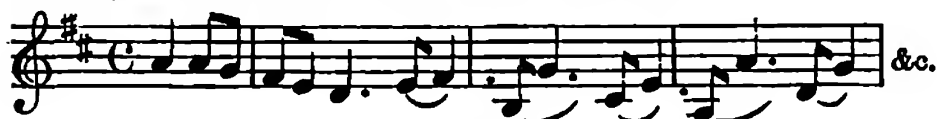
FIG. 55.



4. Rewrite the following in $\frac{6}{4}$ time :



5. Rewrite the following examples of syncopation (from Mozart) as they would probably be written now :



6. What effect (as regards *time*) is produced by the grouping of the notes in the following ? Explain your answer fully.



7. Explain the effect (as regards *time*) of the following :



8. In what other time might the following be written and still produce the same effect? Would any alteration become necessary?



CHAPTER IX.

SEMITONES. SHARPS, FLATS, NATURALS.

88. If we examine the notes C, D, E, F on a pianoforte keyboard, we see that a *black* key comes between C and D, and also between D and E; but there is nothing between E and F.

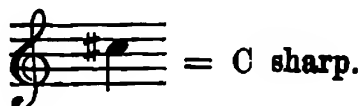
The reason for this is that the musical distance from C to D, or from D to E, is twice as great as from E to F. The black key represents a note half way between C and D. The musical distance or *interval* from E to F is called a **Semitone** (*i.e.* half tone); that from C to D is called a **Tone**, and two semitones make a tone.

FIG. 55.



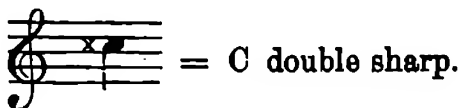
Further examination of the keyboard will show that a similar semitone occurs between B and C.

89. Sometimes it is necessary to raise the pitch of a note by making it a semitone higher. This is shown by writing the sign **#** (called a **Sharp**) before the note: *e.g.*

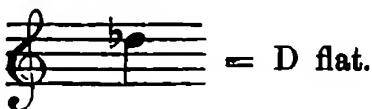


90. Sometimes it is necessary to raise a note already sharpened. This is shown by the sign **×** (called a **Double Sharp**).
D 2

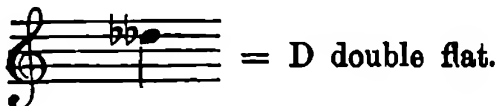
A *double sharp* means that a *natural* (§ 98) note has been raised *two* semitones.



91. The sign \flat (called a **Flat**) means that a note before which it stands is lowered a semitone in pitch.



92. When it is necessary to make a note already flattened a semitone lower, the sign $\flat\flat$ (called a **Double Flat**) is used. A *double flat* means that a *natural* note has been lowered *two* semitones.



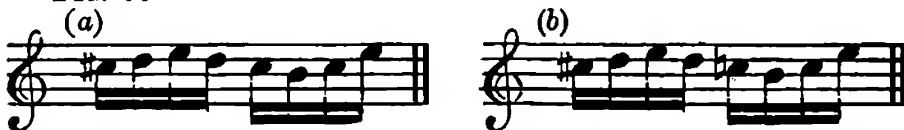
93. When a note which has been made *sharp* or *flat* returns to its original pitch, it is indicated by the sign \natural (called a **Natural**).

94. When a *double sharp* note is to be lowered a semitone (*i.e.* made only a single sharp), it is indicated by $\sharp\sharp$ (sometimes by \sharp alone).

95. When a *double flat* note is to be raised a semitone (*i.e.* made a single flat), it is indicated by $\flat\flat$ (sometimes by \flat alone).

96. When any of these signs (\sharp , \flat , \times , $\flat\flat$, $\sharp\sharp$) are used, they apply to the same note *throughout the bar*, unless they are contradicted.

FIG. 56.



At (a) each C in the bar is meant to be *sharp*, though only the first is marked. If we wish the other C's to be *natural* the sign \natural must be used, as at (b).

97. If the last note of a bar is raised or lowered, and the first note of the next bar is the same note, the sign \sharp , \flat , &c., may be omitted, though it is better to use the sign in the fresh bar.

EXERCISES.

1. Rewrite the following notes, (a) making each note one semitone *lower*; (b) making each note one semitone *higher*, using the same lines and spaces:



2. Rewrite the following, making the notes in (a) one semitone lower; the notes in (b) one semitone higher, using the same lines and spaces:



CHAPTER X.

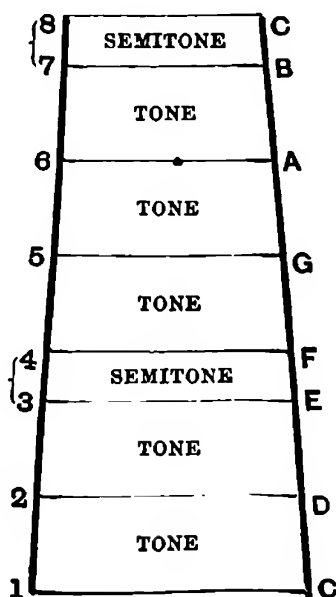
MAJOR SCALES.

98. We have seen that in the series of notes C, D, E, F, G, A, B, C, semitones occur, between E and F and B and C.

This is seen clearly when we exhibit the series in the form of a ladder:



FIG. 57.



We have here a series of *eight* notes following each other in alphabetical order; there are *five* tones and *two* semitones: the semitones occur between the 3rd and 4th *and* the 7th and 8th degrees.¹

99. This series of notes is called the **Major Scale of C**, and the note it starts from (*i.e.* C) is called the **Keynote** or **Tonic** of the scale.

We can now give some definitions.

100 (1). A **Scale** (Lat. *scala*, ladder) is a series of notes arranged in alphabetical order.

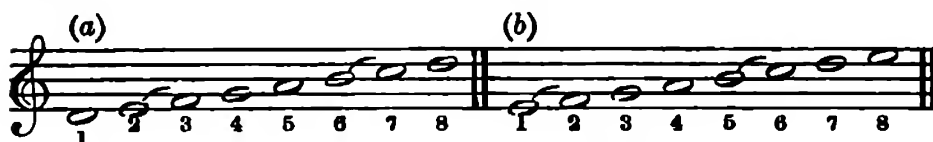
101 (2). A scale which is made up chiefly of tones is called a **Diatonic Scale**.

The term *diatonic* means *through the tones*. The scale shown above has five tones and two semitones.

The term *diatonic* is used to distinguish this scale from one (to be presently described) called a *chromatic* scale, which is made up entirely of *semitones*. There are two kinds of *diatonic* scales, *major* and *minor*. (§ 120.)

102 (3). A **major scale** is a *diatonic scale* proceeding by five tones and two semitones, having the semitones between the 3rd and 4th and the 7th and 8th degrees.

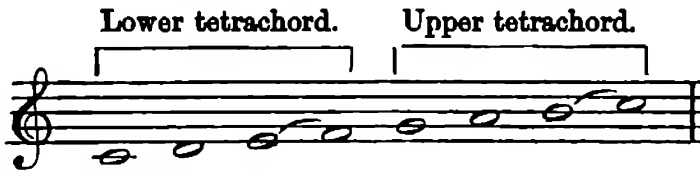
103. We might have a succession of eight notes in alphabetical order beginning with some other note than C; *e.g.*



(a) is a scale beginning on D, and (b) is one beginning on E. They are both *diatonic* scales, but they are neither of them *major* scales, because their semitones do not occur between the 3rd and 4th *and* 7th and 8th degrees. We can make them into *major* scales by altering the pitch of some of the notes so as to make the semitones fall in the right places. We shall best understand this, however, by looking at the scale of C again.

104. Any major scale can be divided into two exactly equal halves.

¹ Each step or note of the scale is called a *Degree*.

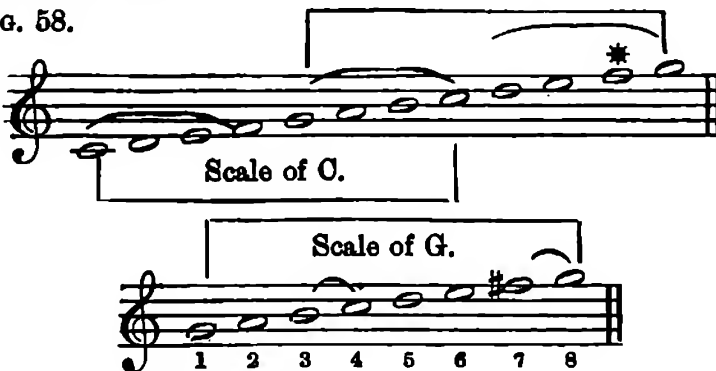


Thus C—F consists of *four* notes with the intervals *tone, tone, semitone*; G—C consists of *four* notes with the intervals *tone, tone, semitone*. Each of these halves is called a **Tetrachord**.¹

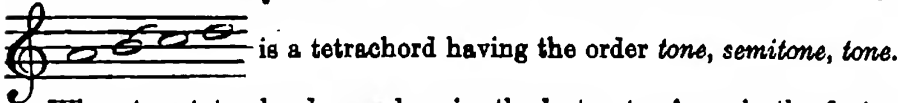
105. If we begin with the upper tetrachord of the scale of C and continue it to the G above, we get a scale beginning on G. But while the semitone of the lower tetrachord is in its right place (between 3rd and 4th), that of the upper tetrachord is between the 6th and 7th. To make this semitone fall between the 7th and 8th (as in the scale of C), we must raise the 7th note a semitone by sharpening it.

Thus by sharpening every F we get a major scale on G exactly resembling the major scale on C.

FIG. 58.

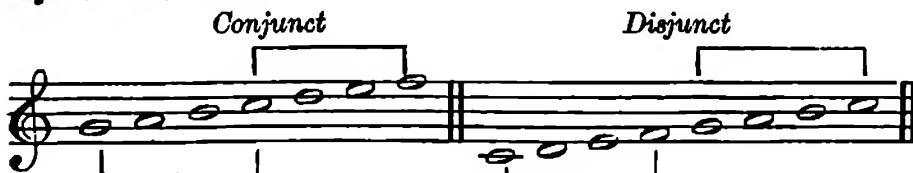


¹ A **tetrachord** (*tetra*, four, *chorde*, string), is a series of *four* notes in alphabetical order, and comprising two tones and one semitone. The semitone does not always occur as in the tetrachord shown above. Thus



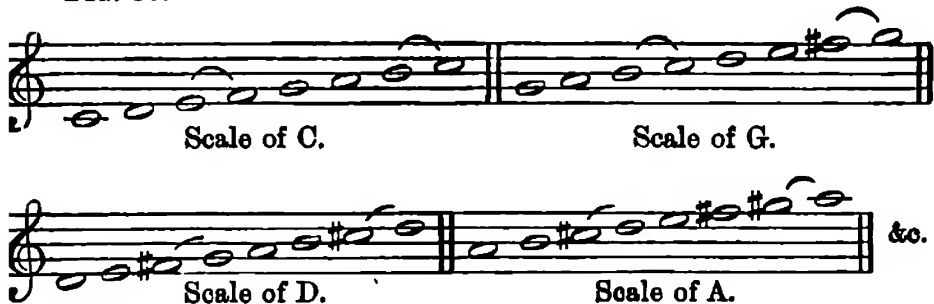
When two tetrachords overlap, *i.e.* the last note of one is the first note of the other, they are called **Conjunct tetrachords**.

When the two tetrachords are distinct from each other, *i.e.* where there is a tone between the last note of one and the first of the other, they are **Disjunct tetrachords**.



106. By taking the upper tetrachord of G, and continuing it, we get the scale of D. And here again the 7th note (C) would have to be sharpened. Continuing this process, we should get a series of major scales, each new scale beginning on the *fifth* note upwards of the previous scale; the *seventh* note of the new scale being sharpened.

FIG. 59.



107. The sharps thus used in scales are not written every time each note occurs, but are placed *once for all* at the beginning of every stave. These together are called the **Key Signature**, and it is understood that every note in a piece of music is to be played according to the signature, unless altered in the course of the movement.

108. Each fresh sharp added is a perfect fifth¹ (§ 186) higher (or a *perfect fourth* lower, § 185) than the preceding one. Thus: F#, C#, G#, D#, A#, E#, B#.

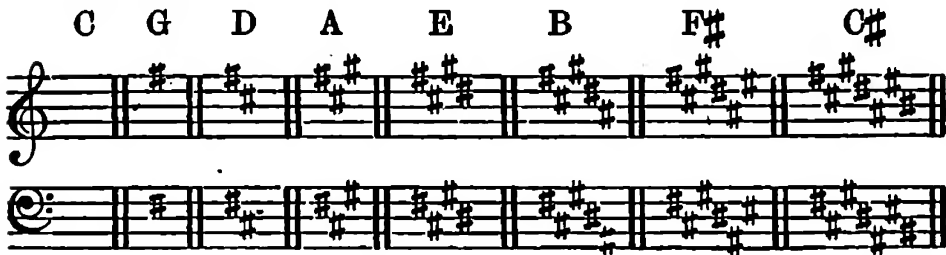
These are written in the signature in a definite order, in such a way as to get them symmetrically on the stave. Each fresh sharp is added to the *right* of those previously standing. Starting with F#, the other sharps are either a fourth below or a fifth above, no ledger lines being used.

109. The scales are named after their keynote or according to the number of sharps or flats in the signature. Thus we speak of G or one sharp, &c. The scale of C is often called the *Natural Scale*, because no notes of it are sharp or flat.

¹ The musical distance from one note to another is called an *interval*. Intervals are named according to the *number* of notes included: e.g. C-G is called a **fifth**. When a fifth consists of *three* tones and *one* semitone it is called a **perfect fifth** (v. Chap. XVI.)

110. Table of key-signatures of keys with sharps.

FIG. 60.



111. In major keys with *sharps* the keynote is always a semitone above the last sharp of the signature.

112. By taking the *lower* tetrachord of the natural scale and continuing it downwards, we get a scale beginning and ending on F, but to make the semitones agree with those of the natural scale we must make the B flat.

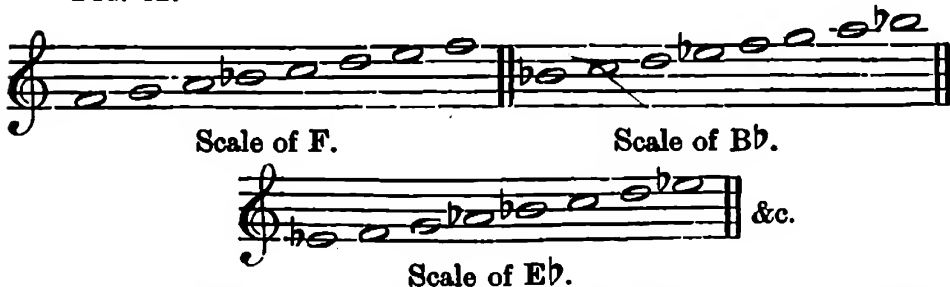
FIG. 61.



113. Continuing the process, we get a series of *major scales with flats*.

Each new flat scale begins a *perfect fifth* below the old one, and each new flat scale has its fourth note flattened. Thus :

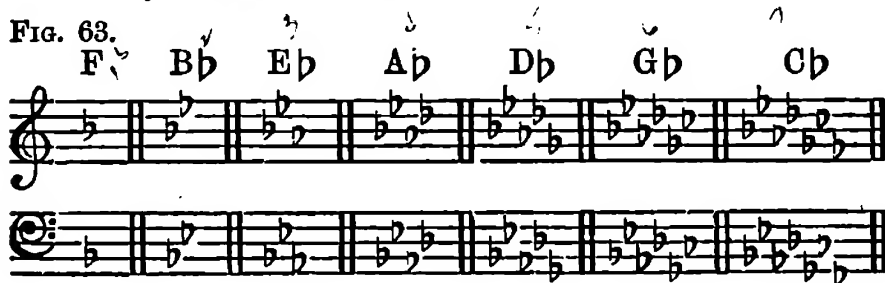
FIG. 62.



114. The flats used follow each other a *fifth* below (or a *fourth* above), *i.e.* B \flat , E \flat , A \flat , D \flat , G \flat , C \flat , F \flat .

As in the case of scales with sharps, the flats of a scale are written as a key-signature at the beginning of each stave, each new flat being placed out to the right, alternately a fourth above and fifth below.

115. Key signatures of keys with flats.



116. In major keys with flats the last added *flat* is always the *fourth* note of the scale, and therefore the *keynote* is three notes below the last added flat.

117. **Summary.**—The following **major scales** are used in music :

(1) The **natural scale** of C, without sharps or flats.

(2) *Seven* scales with **sharps** in the signature. The **sharp** keys follow each other in the order of the number of sharps required, each new scale beginning a **perfect fifth** above the last one.

Thus (starting from C) G, D, A, E, B, F \sharp , and C \sharp , are the keynotes.

(3) *Seven* scales with **flats** in the signature. The **flat** keys follow each other in the order of the number of flats required, each new scale beginning a **perfect fifth** below the last one.

Thus (starting from C) F, B \flat , E \flat , A \flat , D \flat , G \flat , C \flat are the keynotes.

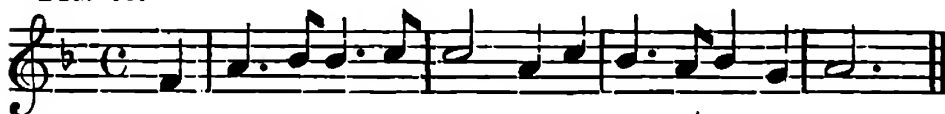
118. We have used the terms *Key* and *Scale*. It is necessary to distinguish between them.

A **scale** means notes arranged *in alphabetical order*.

A **key** means all the notes of a scale, but *not taken in alphabetical order*.

Thus the following consists of notes from the scale of F. It is in the *key* of F ; but it is not the *scale* of F.

FIG. 64.



Note on Key-signature.—When in the course of a piece the key changes, it is usual to correct the sharps or flats of the first key by *naturals* before writing the proper signature. Thus, a piece beginning in A major and modulating to E♭ would stand thus:—

FIG. 65.



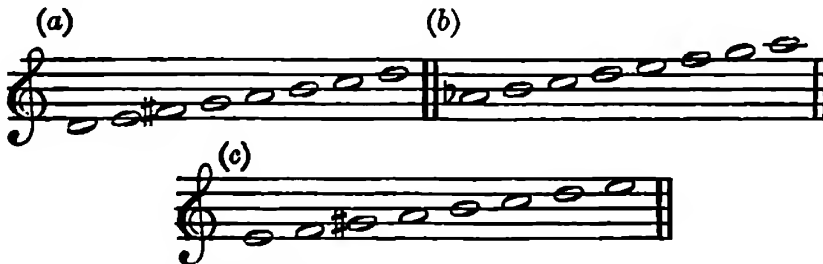
EXERCISES.

1. Write out the major scales beginning on E, on B, on F♯, adding the sharps as required. Mark the position of the semi-tones (by the sign ∩).

2. Write out the major scale having *four* flats for signature, (a) making each note flat as required; (b) with a key-signature.

3. Write the signatures (on the bass stave) for the following keys: F, E, E♭, D♭, B.

4. Add sharps or flats to the following to make the scales of (a) D; (b) A♭; (c) E.



5. Write the signatures (in bass and treble staves) for the major scales of B♭, A♭, D, D♭, A.

6. Rewrite the following signatures, placing the sharps and flats in the usual order. Write underneath each the keynote of the scale represented.



7. Add any sharps or flats that may be necessary to make the following melody in the key of E♭. Add the signature.



8. Write below each of the following the name of the major key it indicates.

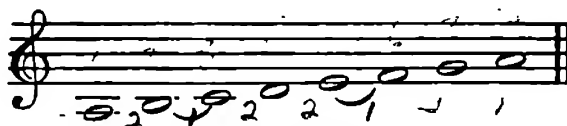


CHAPTER XI.

THE MINOR SCALE.

119. There is another diatonic scale, which differs from the major. The pattern scale is that beginning on A, using only natural notes.

FIG. 66.

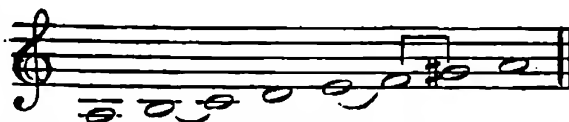


120. This is one form of the scale of **A** minor ; it is a diatonic scale, having its semitones between the 2nd and 3rd, 5th and 6th.

121. The chief difference between a *major* and a *minor* scale lies in the first three notes. In a major scale (e.g. C), the distance from the *first* note to the *third* (C—E), is *four* semitones, or a *major third* ; in the case of a *minor* scale (e.g. A—C), it is *three* semitones, or a *minor third*. This is the reason for the names *major* (= greater), and *minor* (= less).

122. In the above scale the 7th note is a tone below the 8th. This has an unsatisfactory effect, and the 7th note of a minor scale, like that in fig. 66, is raised a *semitone* in order to make it only a semitone below the octave.

FIG. 67.



This produces an interval (F—G \sharp) larger than a tone, called an *augmented second* (§ 197). As that interval used to be considered difficult to sing, the 6th note of the minor scale was also *raised* a semitone in *ascending*. In *descending* there is no

objection to the 7th being a tone below the 8th, so both the 6th and 7th notes have their pitch as in fig. 66.

FIG. 68.



123. This form is called the **Altered Diatonic** minor scale. As it is chiefly used in melodic progressions, it is sometimes called the **Melodic** minor scale. Note that the *ascending* form differs from the *descending*.

124. The form of the minor scale most used in modern music is that which has only the *seventh raised*. As this form is convenient for purposes of harmony (*i.e.* the harmonies of the minor scale are built up from the notes of this form), it is often called the **Harmonic** minor scale. It is also called the **Chromatic** minor scale, because it contains an interval between the 6th and 7th notes called a *chromatic interval* (v. § 181). This form of the scale is the same ascending as descending.

125. There are then *three* forms of every minor scale.

I. Diatonic minor scale.

FIG. 69.



II. Altered¹ diatonic minor scale.



III. Harmonic or Chromatic minor scale.



¹ The altered diatonic minor scale is also found with the raised 6th and 7th in descending, especially in Bach and Handel.

natural
I. The diatonic minor is the same *ascending* and *descending*.

Melodic
II. The altered diatonic has the sixth and seventh notes raised a semitone in *ascending*; in *descending* the sixth and seventh notes are restored to the same pitch as in the diatonic minor.

III. The harmonic form has only the seventh note raised both ascending and descending, and it contains a *chromatic* interval between the 6th and 7th degrees.

126. If we compare the *major* scale of C and the *minor* scale of A in its original diatonic form, we shall see that they are both made up of exactly the same notes, the only difference being that they each have a different starting-point.¹

127. Two scales which contain all (or nearly all) the same notes are said to be related.²

The scale of A minor is called the **Relative minor** of C major.

The scale of C major is called the **Relative major** of A minor.

128. In the same way every *major* scale has a **relative minor**, which begins a **minor third** (*i.e.* three semitones) below the major.

The relative minor of A major begins on F♯; the relative minor of E♭ major begins on C, &c.

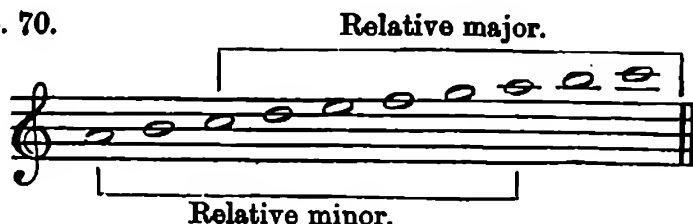
129. Every *minor* scale has a **relative major**, which begins a **minor third** above the minor.

The relative major of F minor begins on A♭; the relative major of C♯ minor begins on E.

¹ Major and minor scales are sometimes spoken of as diatonic scales *major mode* and diatonic scales *minor mode*. The word *mode* means *manner*. Both scales, major and minor, use the same notes, but each in different *manner* or *mode*.

² Another way of expressing this is, by reference to tetrachords: *Two scales which have a tetrachord in common are said to be related*. Thus (fig. 58) the upper tetrachord of C is the lower tetrachord of G. The scales of C and G have a tetrachord in common: they are therefore related.

FIG. 70.



130. The alterations (§ 122) in the minor scale are not shown in the key-signature, but are indicated by the signs \sharp , \flat , &c., each time they occur in the course of the music.

131. The signs \sharp , \flat , \natural , &c., used, not in a signature, but in the course of a composition, are called **Accidentals**.

132. The **key-signature** of *relative major* and *minor* scales, therefore, is the same.

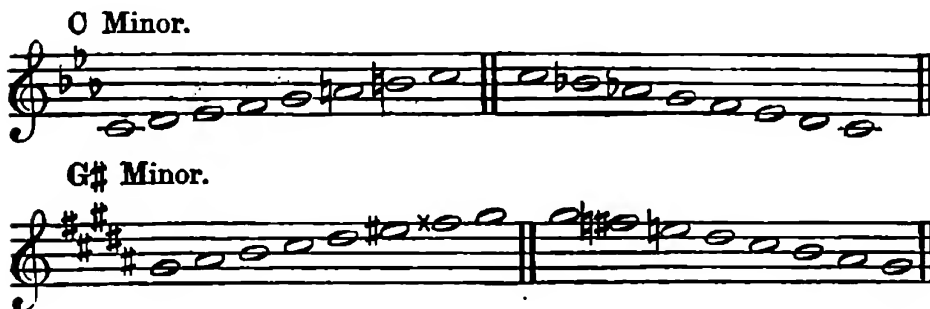
133. Table of major and minor keys, with key-signatures.

MAJOR	C	G	D	A	E	B	F \sharp	C \sharp
SIGNATURE								
MINOR	A	E	B	F \sharp	C \sharp	G \sharp	D \sharp	A \sharp

MAJOR	F	B \flat	E \flat	A \flat	D \flat	G \flat	C \flat
SIGNATURE							
MINOR	D	G	C	F	B \flat	E \flat	A \flat

134. Every *signature*, therefore, stands for two keys. We have already shown (§§ 111, 116) how to find the *major* key from the signature and, knowing the major, § 128 tells us how to find the minor.

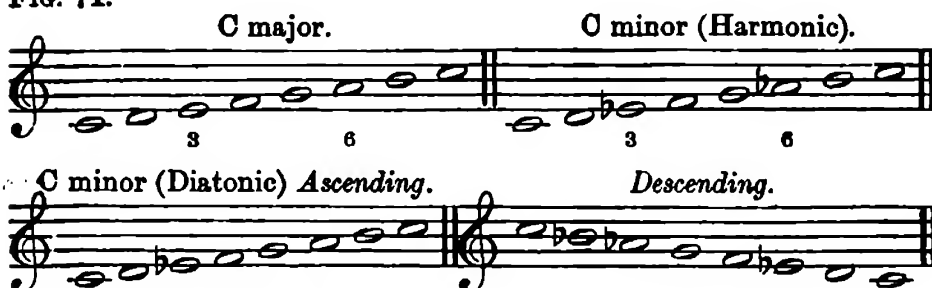
135. In writing out minor scales care must be taken to use the proper sign for raising and lowering the sixth and seventh notes. If, according to the signature, these are *flat*, a *natural* will raise them, as in C minor below. If they are *sharp*, a *double sharp* will be necessary. (§ 90.)



136. A *major* and a *minor* scale beginning on the same note are called respectively **Tonic Major** and **Tonic Minor**: e.g. C major and C minor.

137. To change any tonic major scale into the tonic minor it is necessary to lower the 3rd and 6th notes a semitone. This will give us the harmonic form of the minor scale, from which either the melodic or diatonic forms can be got by §§ 120-5.

FIG. 71.



138. The degrees of every diatonic scale receive certain names.

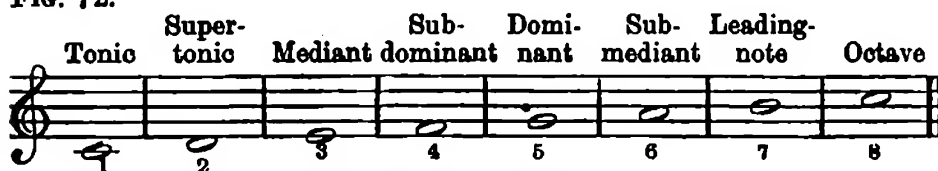
The **first** note is called the **Tonic**. The **fifth** note, from its importance in harmony, is called the **Dominant** (or *ruling-note*). The **third** note, being *midway* between tonic and dominant, is called the **Mediant**.

Reckoning from the tonic a fifth *downwards*, we get to the octave of the *fourth* note of the scale, and as the fifth *upward* is called the *dominant*, the *fourth* note is called the **Subdominant** (or *lower dominant*). The *sixth* note is midway between *subdominant* and *tonic* (or octave of tonic), and it is called the **Submediant**.

The *second* note is called the **Supertonic** (*i.e.* over the tonic), and the *seventh* note is called the **Leading-note**, because it has a strong tendency to proceed or lead up to the octave.

Thus in the key of C these names would be :

FIG. 72.



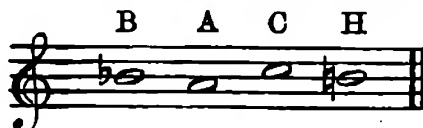
NOTE TO CHAPTER XI.

French and German Names of Notes, &c.

139. In French the notes C, D, E, F, G, A, B are called respectively *ut*, *re*, *mi*, *fa*, *sol*, *la*, *si*. The sign \sharp is called *dièse*; the sign \flat , *bémol*; *majeur* and *mineur* respectively mean *major* and *minor*.

140. In German the letter names are used as in English, but B always means B \flat ; the name for B *natural* is H.

Bach wrote a series of fugues on the name B A C H.



141. When a note is sharpened or flattened its German name is obtained by adding *-is* (= *sharp*), *-es* (= *flat*) to the letter name: *e.g.* *Dis* = D sharp, *Des* = D flat.

Schumann has a melody founded on the name A S (= *es*) C H (*v. Harlequin, &c.*, in the *Carneval*).



142. The terms for *major* and *minor* are respectively *dur* and *moll*.

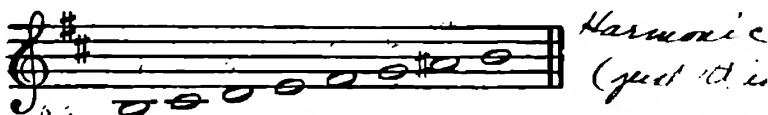
143. Examples of names of keys in English, French, and German :—

English.	French.	German.
F minor	Fa mineur	F moll.
C \sharp major	Ut dièse majeur	Cis dur.
E \flat major	Mi bémol majeur	Es dur.

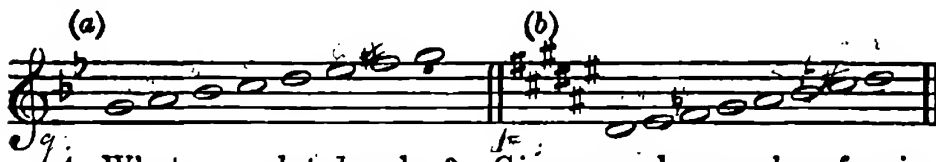
EXERCISES.

1. Write out, in the three forms, the minor scales beginning on F, D, and E.

2. What form of the minor scale is the following? Why is it so called? What interval characterises it?



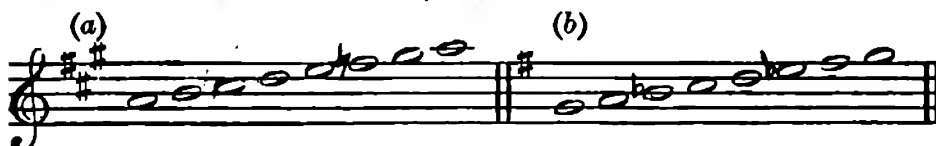
3. What alteration is necessary to make the following scales into harmonic minor scales? How would the alteration be made?



4. What are *related scales*? Give several examples of pairs of related scales.

5. What are the *relative minors* of E, G, F, and D major? What are the relative majors of F#, C#, G, and Ab, minor?

6. Add accidentals which will make the following major scales into *tonic minor scales*, Harmonic form.



7. Write *above* the following the name of the major scale to which they belong, and *below* the name of the minor.



8. What note is the dominant in each of the following scales: E maj.; B min.; Bb maj.; F maj.; F minor? What is the leading-note in Bb, C, F, F#, B, D, and A major?

9. What is the mediant, and what is the submediant in F, G, Bb, C#, Ab, E.

CHAPTER XII.

KEYS.

144. A piece of music rarely remains very long in the same key. The signature, however, is not changed every time a change of key occurs, but notes which differ from the signature have accidentals.

145. To recognise what key any part of a composition or any melody is in it will be necessary to examine the accidentals used, keeping in mind the sharps and flats which characterise each key (§ 117). This will best be seen from examples.

146. I.



The first sharp present is D ♯—the *fourth* added sharp (§ 117). This in itself indicates four sharps, unless there is something to contradict it. The order of the sharps in the major keys is F ♯, C ♯, G ♯, D ♯. All these are present in the above melody except G ♯, and as G does not occur at all in this melody there is no reason for assuming that it would not be G ♯ if it did occur. We may therefore conclude that the key is E major (four sharps).

147. II.



The first accidental is F ♯, which would suggest a key with sharps, but we soon find flats, which suggest a key with flats.

It must be here remembered that the leading note (7th) of a *minor* key with flats often has the sign ♯. The F ♯ is then probably the raised seventh, in which case the tonic is G, and when we remember that G minor has two flats, B♭ and E♭, we shall soon see that the key here is G minor (two flats).

148. It will help the student if he remembers that practically all melodies *end* either on the *tonic*, on the *mediant*, or (rarely) on the *dominant*.

EXERCISES.

1. Say what key each of the following melodies is in ; rewrite it with a key-signature.

(1)

(2)

(3)

2. In the following cases say what is the key, taking into consideration the signatures and accidentals; rewrite with proper signature.

(1) 

(2) 

(3) 

CHAPTER XIII.

ACOUSTICS.

149. The science which investigates the laws of sound is called *acoustics*, from a Greek word *akouo*=I hear.

150. All sounds are the result of vibrations. When the vibrations are regular, the sound is musical; when the vibrations are irregular, the sound ceases to be musical and becomes mere noise.

151. The *pitch* of a sound depends on the number of vibrations in a given time. The greater the number of vibrations the higher the pitch.

Thus, middle C is produced by 256 vibrations in a second; the D above by 288 vibrations, &c. On this principle, if we *double* the number of vibrations we must get a note twice as high. Therefore, the *octave* of a note is produced by exactly *twice* as many vibrations as the note itself: *e.g.* the C above the middle C would have 512 vibrations; that below the middle C, 128, &c. The lowest sound used in music is that produced by

* Whatever the signature may be, the sign \sharp or \flat now always means a note altered from its *natural* state, not from its condition according to the signature. Here $G\sharp$ means a semitone higher than $G\flat$. On the contrary, a natural (\natural) always means that a note is changed from its condition according to the signature or to some previous accidental.

16 vibrations per second. This note is the C *four* octaves below middle C, produced by an open organ pipe 32 feet long.¹

The highest sounds used in music have between 4,000 and 5,000 vibrations; such are those produced by the highest notes of a piano, piccolo, &c.

The standard of 256 vibrations for middle C is called the philosophical standard, but it is not the one in general use. Indeed, owing to a variety of circumstances, the standard pitch has gradually been raised since Handel's time. English concert-pitch is now about 264 vibrations for middle C. French standard (normal) pitch is in general use on the Continent; it has about 435 vibrations for the A above middle C. This gives middle C 261.

152. The *relative* pitch of sounds is expressed by the ratio of their vibration numbers: *i.e.* by placing their vibration numbers as a vulgar fraction.

Thus C = 256; D = 288; the relation of D to C is $\frac{288}{256}$, or reducing to lowest terms $\frac{9}{8}$.

153. The *intensity* or *loudness* of a sound depends on the *amplitude* (*i.e.* size) of the vibrations.

This may be proved by plucking a violin string: the further we pull it aside the wider the vibrations and the louder the sound.

154. Vibrating bodies possess, in a greater or less degree, the following natural property, best explained by a vibrating string:

If a stretched string, fastened at both ends, is made to vibrate, not only does the string vibrate as a whole, but also in *halves, thirds, quarters, fifths*, &c., at the same time.

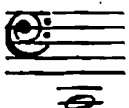
The vibrations of the different parts of the string each produce their own notes at the same time, so that the total sound heard is a *compound sound* made up of a series of sounds produced by the whole string and its different parts. The shorter the same string is made, the higher the note produced: therefore the notes produced by the subdivisions of the string are higher than the note of the whole string.

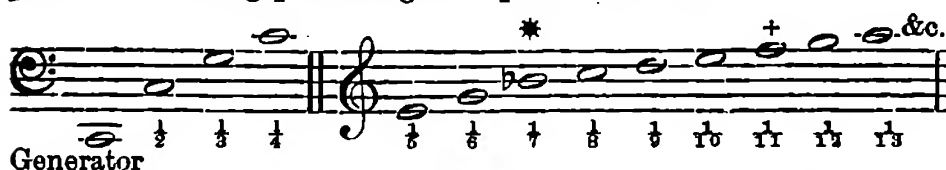
The sound produced by the whole string is called the **Fundamental** or **Generator**; the upper notes are called **Harmonics** or **Overtones**.

These harmonics exist practically in all sounds, even when they cannot be detected by the unaided ear; and if a low note on the piano be struck, by carefully listening we shall be able to detect some of the overtones.

155. The whole of the notes produced by a fundamental note—*i.e.* the fundamental note and its overtones—are called the **Harmonic Series**.

¹ This is only found in the largest organs, the lowest note of most organs being the C, *three* octaves below middle C, produced by 32 vibrations. The lowest note (A) in the modern piano has 27 vibrations.

Thus for the note  the first twelve overtones would be as shown below. The fraction below each note shows the *part* of the string producing that particular note.



The note marked * is a little flatter than B \flat ; that marked + is definitely sharper than F \sharp .

The notes here exhibited are heard together, and the total result is the compound tone spoken of in § 154. As might be expected, the overtones are much fainter than the generator; indeed, they cannot often be heard by the unaided ear, although it is easy to prove their existence even in that case. The effect of the overtones, therefore, is, not to hide the generating tone, but merely to modify it in *quality*. Those sounds are richest in quality which have most overtones in addition to the generator.

156. We are now able to explain the cause of the differences of quality in musical sounds. We have said that all vibrating bodies produce overtones, but some bodies naturally produce more than others. The quality or *timbre* of a musical sound depends mainly on the number and force of the overtones included in the sound.

157. **Resonance.** When any sound is produced, the vibrations producing that sound have the power to set other bodies in vibration, provided those bodies produce the same note (or one of its harmonics) as the original sound. This is called **Resonance**.

If, after gently raising the dampers of a piano, I sing the note C, the vibrations produced by my singing set in motion the strings of the piano which produce C or its harmonics, and I hear distinctly the note I sang, reproduced on the piano. If, again, with raised dampers, I cough or shout near a piano, I am able to set up vibration in a great number of strings, which produce a confused noise. This will make it clear why the so-called loud pedal in a piano is, besides being a sustaining pedal, really a *loud* pedal; for if a chord is struck while the dampers are up, all similar notes in the piano are set in vibration and the chord is reinforced and made louder.

158. We can now fully explain the quality of musical sounds.

If we make a stretched string vibrate, the quality of the sound

will depend on its overtones, which again depend on the quality of the string. If now we place this string on a violin and make it vibrate, the vibration of the string will by resonance cause the air in the instrument to vibrate, and also the wood of the instrument. Therefore the quality of the *sound* will depend on the quality of the string, the quality of the wood, and the perfection of the shape and make of the instrument.

CHAPTER XIV.

DIATONIC AND CHROMATIC SEMITONES.

159. We have already seen that the intervals B-C and C-C \sharp are each called a semitone, but *theoretically* the two examples are not exactly equal. This requires explanation.

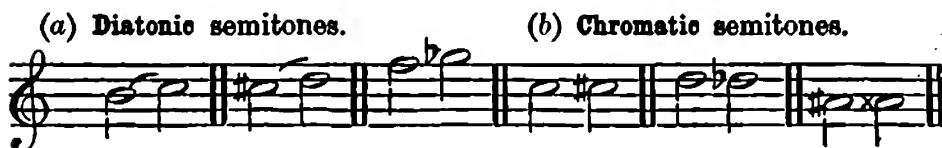
160. A semitone occurring between two notes with different letter-names is called a **Diatonic Semitone** [fig. 74 (a)].

Such semitones are *diatonic*, because they can occur in diatonic scales.

161. A semitone occurring between any note and the same note raised or lowered by an accidental is called a **Chromatic Semitone** [fig. 74 (b)].

Chromatic semitones can only occur in a chromatic scale (§ 174).

FIG. 74.



162. We might express the difference by means of the *ratio of vibration* (§ 152). The ratio for a *diatonic semitone* is $\frac{16}{15}$; the ratio for a *chromatic semitone* is $\frac{25}{24}$. As a *diatonic semitone* is greater than a *chromatic semitone*, the *diatonic* is sometimes called a **major semitone** and the *chromatic* a **minor semitone**.

163. We see then that the semitones C to C \sharp and D to D \flat are both chromatic. If we raise C to C \sharp , and lower D to D \flat , according to the ratio for chromatic semitones, the two notes C \sharp and D \flat are *not alike*. In other words, *theoretically* there are *two* intermediate notes between C and D, i.e. C \sharp and D \flat .

164. Formerly organs were occasionally made which had different keys for $C\sharp$ and $D\flat$. But as to be perfectly accurate it would be necessary to have similar pairs of keys for $G\sharp$ and $A\flat$, &c., it is easy to see that such a plan would make instruments like the organ or piano extremely complicated. It is therefore necessary to set aside *theoretical* semitones in tuning pianos and organs, and this is done as follows:—

165. The octave is divided into **Twelve equal semitones**, so that in *practice* C to $C\sharp$, D to $D\flat$, E to F , B to C are all equal.

As the semitone thus obtained is smaller than a diatonic and larger than a chromatic, *i.e.* it lies between them, it is called a **mean semitone**.

A violinist produces semitones by moving his fingers up or down the string, and as he is able to move them at will he is able to make the difference between chromatic and diatonic semitones. So also is a good singer. But in all cases where the note is played by a fixed key, as in the piano, &c., the mean semitone is used.

166. Since on instruments of the piano kind there is no difference between $C\sharp$ and $D\flat$ &c., it makes no difference in effect whether $C\sharp$ or $D\flat$ is written, the same key of the instrument being used in both cases.

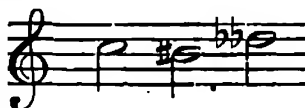
167. When two notes with different names have the same sound, *i.e.* are played by the same key on a keyed instrument, they are said to be **enharmonic**¹ to each other.

Thus $C\sharp$ and $D\flat$ are **enharmonics**; so also $G\sharp$ and $A\flat$.

If $C\sharp$ occurred in a piece of music, and the next note was $D\flat$, *i.e.* $D\flat$ written instead of $C\sharp$ a second time, it would be called an **enharmonic change**.

168. By means of enharmonic change every note on the piano (except $G\sharp=A\flat$) can be written in three ways. Thus C may be also called $B\sharp$ or $D\flat$, each of the three notes being played by the same *key* on a piano.

FIG. 75.



169. Enharmonics are useful as offering a convenient means of simplifying *written* music for *keyed* instruments.

170. If we compare the keys of seven flats ($C\flat$) and five sharps (B) we find the notes played on a piano identical. As it

¹ There is another use of the word. A scale which provided for the two notes $C\sharp$ and $D\flat$, &c., would be called an *enharmonic scale*.

is easier to play with fewer altered notes we often find where a piece has *modulated* (i.e. changed its key) into the key of $C\flat$ the notes are written as if in B (i.e. five sharps). Similarly, seven sharps ($C\sharp$) and five flats ($D\flat$) use just the same keys on a piano, and the key of $D\flat$ is often used instead of $C\sharp$.

The first movement of Beethoven's "Moonlight Sonata" is in $C\sharp$ minor (signature four sharps). The second movement is in the *tonic major* (§ 136), i.e. $C\sharp$ major (seven sharps), but it is written enharmonically in *five flats* ($D\flat$).

171. When a change of this kind only lasts for a few bars the signature is not altered, but the enharmonic change is indicated by accidentals. Sometimes an enharmonic change is made for convenience of modulation. Thus the following example (Mozart's "Fantasia e Sonata" in G minor) modulates at * into $C\flat$ (seven flats), but as it changes into G major in a few bars, it is simpler to approach this by writing in B major (five sharps) instead of seven flats.

FIG. 76.



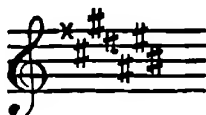
If this were written without enharmonic change it would stand thus :

FIG. 77.



172. If we continued the series of scales described in § 117 we should get scales having more than seven sharps or flats in their signature.

For example: a major scale beginning on $G\sharp$ (the next fifth above $C\sharp$) would be the same as that on G with every note made a semitone higher. That is, every note would be sharp, and as F was already sharp (in the key of G), it would now be double sharp. The signature for $G\sharp$ would then be eight sharps, thus



173. Keys requiring more than seven sharps or flats are never indicated by signature, but not infrequently music modulates into such keys. If the change into the key with more than seven flats or sharps only lasts a few bars, accidentals are used; if a longer section occurs the key is **enharmonically changed**. Two examples from Schubert will make this clear.

No. 1 is from the Trio in Op. 78. The movement begins in five sharps, as shown in the signature, but presently it modulates into $G\sharp$ major (eight sharps). As this only lasts for two or three bars, accidentals are used.

FIG. 78.



That this is in $G\sharp$ major is seen from the fact that all the notes used are made sharp, and the leading note is $F\sharp$.

No. 2, 'Moments Musicaux,' No. 6, in four flats modulates at the end of the second section to eight flats ($F\flat$ major). The third section is written enharmonically in E major (four sharps).

FIG. 79.

End of Section 2. Beginning of Section 3.



EXERCISES.

1. What is the difference between a diatonic and a chromatic semitone? Give examples in musical notation.
2. What other names can the following keys on the piano bear? C \sharp , F, B \flat , G \sharp .
3. By what notes on a piano are the following played? B \sharp , F \flat , G \times , G $\flat\flat$, C \flat , B $\flat\flat$.
4. What does the term enharmonic mean? Give examples. Of what use are enharmonics?
5. What would be the key-note of a scale having nine flats? Write its signature. How could it be represented enharmonically?

CHAPTER XV.

THE CHROMATIC SCALE.

174. A **Chromatic¹ Scale** consists entirely of semitones.

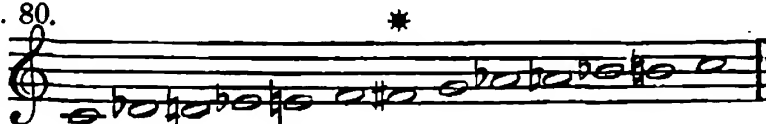
As pointed out in § 165, the chromatic scale consists of *twelve* equal semitones, and, counting the upper octave as well, there are thirteen notes.

There are two ways of writing the chromatic scale.

175. I. The **Harmonic Chromatic Scale** is the same ascending and descending. The notes between the tones of the ordinary scale are obtained by *lowering* the upper one (e.g. between C and D is called D \flat), except that between the fourth and fifth, which is always written as the **sharpened fourth**.

Harmonic Chromatic Scale of C (ascending or descending).

FIG. 80.



This form of the chromatic scale is called "*Harmonic*" because, as will be seen later, it is the most convenient for purposes of *harmony*. If the *harmonic series* described in § 155 were continued far enough we should find that it contained all the notes used in the above scale.

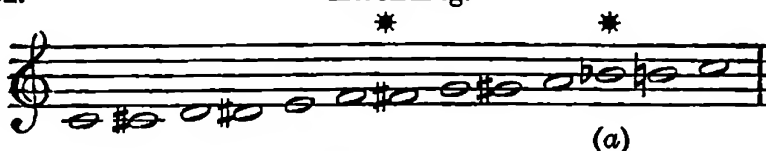
¹ The word *chromatic* is derived from the Greek *chroma* = colour.

176. II. In the **arbitrary chromatic scale** the semitones are written as follows : The *fourth* is always raised ; the *seventh* is always *lowered*. The other semitones are raised in *ascending*, lowered in *descending*.

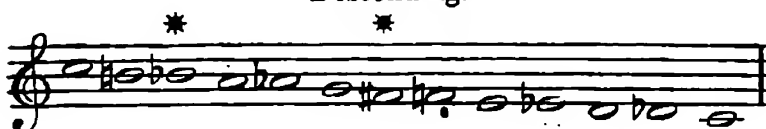
Arbitrary Chromatic Scale.

FIG. 81.

Ascending.



Descending.



The reasons in favour of this scale are that, though it is not *theoretically* correct, it is easier to read and requires fewer accidentals than the harmonic form.

The note marked (a) is sometimes written A \sharp in ascending. Great composers like Mozart and Beethoven have used both forms. Sometimes they begin a chromatic scale in the harmonic form and then continue it (in a second octave) in the arbitrary form. Their principle apparently was to use whatever form best suited their immediate purpose.

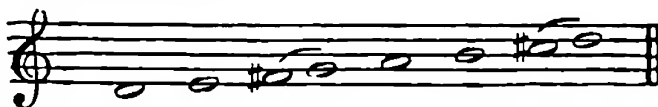
177. NOTE.—Great care must be exercised in selecting the proper accidentals for *lowering* and *raising* the notes of the chromatic scale. Thus in the harmonic form of A \flat the second note must be B \flat lowered a semitone, i.e. B $\flat\flat$. Thus :

FIG. 82.



Note on writing the Chromatic Scale.

Suppose we have to write the chromatic scale of D. First write the major scale of D, leaving a space between the *tones* of the scale and marking the semitones¹ by slurs thus :



¹ It is obvious that no notes can be added between the notes forming semitones.

Next insert the intermediate notes according to §§ 175-6. Thus if we are writing the *harmonic* (§ 175) *chromatic*, (1) the *fourth* note must be *raised*; in all the other cases the upper note of each pair must be lowered thus:

- (2) between D and E is E \flat
- (3) „ E and F \sharp is F \sharp
- (4) „ A and B is B \flat
- (5) „ B and C \sharp is C \sharp

When the chromatic scale is written, count the notes. There should be eight in the major scale with five added notes, *i.e.* thirteen in all.



EXERCISES.

1. Write the chromatic scales (harmonic form) in the following keys : D, B, A ; C \sharp ; F, B \flat , D \flat .
2. What are the reasons in favour of the arbitrary chromatic scale as against the harmonic? Write out in both forms any chromatic scale which you think specially illustrates the point.

CHAPTER XVI.

INTERVALS.

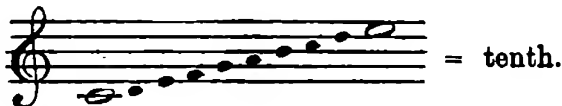
178. An *Interval* is the difference in pitch between any two notes. Intervals are named according to the number of degrees of the staff included.

Thus C to D is called a *second*; C to E a *third*, &c., as seen from the following table :



Intervals are always counted *upwards* unless the contrary is expressly stated.

179. Intervals up to and including the 8th are called *Simple Intervals*. Beyond the 8th they are called *Compound Intervals*, being merely an octave added to a simple interval, e.g. a 10th is an octave added to a third.



With the exception of the 9th, 11th, and 13th, compound intervals are not used in harmony, and the simple name is usually applied however many octaves may be added to a simple interval: e.g. each of the following would be called a 3rd in harmony:—

FIG. 84.



180. The name of the interval depends entirely on the number of degrees included. C to D and C to D \flat are both seconds. It is clear then that different *kinds* of intervals must be distinguished.

181. Intervals which occur between any two notes of an *unaltered* diatonic scale are called **diatonic intervals**.

Intervals which can only occur in a chromatic scale are called **chromatic intervals**.

E.g. the interval E to G is *diatonic*, because it can occur in the scales of C, D, &c.

The interval C \sharp to B \flat is *chromatic*, because it cannot occur in any *unaltered diatonic* scale. It occurs in D minor, but only when the diatonic form of D minor has been altered by the raising of the 7th to C \sharp (§ 124).

DIATONIC INTERVALS.

182. If we examine all the intervals of the second in the scale of C major we find that some contain *two* semitones (e.g. C to D; G to A &c.); others contain only *one* semitone, e.g. B to C; E to F. Those containing two semitones are called **major seconds**; those with *one* are **minor seconds**.

183. In the same way there are *major* and *minor thirds*; **major thirds** (e.g. C to E; F to A) have four semitones; **minor thirds** (e.g. D to F; E to G) have three semitones.

183 (a). Similarly, **sixths** may be *major* or *minor*; **major sixths** (e.g. C to A) have nine semitones; **minor sixths** (e.g. E to C) have eight semitones.

184. Again, **sevenths** may be *major* or *minor*; **major sevenths** (e.g. C to B) contain eleven semitones; **minor sevenths** (e.g. D to C) contain ten semitones.

185. The *fourth*, *fifth*, and *octave* of any major scale reckoning from the tonic are called *perfect*.

All the fourths of a major scale (e.g. C to F; D to G, &c.), with one exception, contain five semitones and they are called **perfect fourths**.

The exception is the *fourth* from F to B *upwards* (i.e. from the *subdominant* to the *leading note*), and it is larger than a perfect fourth. It contains six semitones, and is called an **augmented¹ fourth**.

As the *augmented fourth* consists of six semitones or *three tones*, it is often called the *tritone* or the *tritone fourth*.

186. All the *fifths* of a major scale (e.g. C to G; D to A, &c.), with one exception, contain seven semitones, and they are called **perfect fifths**.

The exception is the *fifth* from B to F *upwards* (i.e. from *leading note* to *subdominant*), and it is smaller than a *perfect fifth*. It contains six semitones, and is called the **diminished fifth** (or the *imperfect fifth*).

187. The *augmented fourth* and the *diminished fifth* occur only once in each major scale, on the fourth and seventh degrees respectively.

FIG. 85.



Augmented 4th. Diminished 5th.

¹ This 4th is sometimes called the *pluperfect* 4th, and its companion, the diminished 5th, is then called the *imperfect* 5th. Those who use these names do so because these intervals are *diatonic*, and they prefer to reserve the names *augmented* and *diminished* for *chromatic* intervals (v. §§ 192-4).

In the Harmonic form of the minor scale each of these intervals occurs *twice*—viz., *augmented* 4ths on the 4th and 6th degrees ; the *diminished* 5th on the 2nd and 7th.

188. Summary of Diatonic Intervals :—


Seconds, thirds, sixths, and sevenths are either *major* or *minor*.

Fourths are *perfect* or *augmented*.

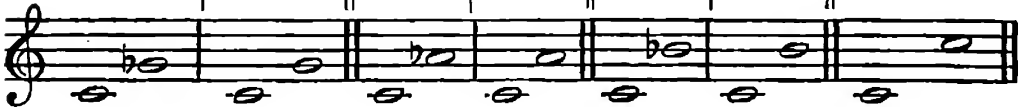
Fifths are *perfect* or *diminished*.

189. Table of Diatonic¹ Intervals.

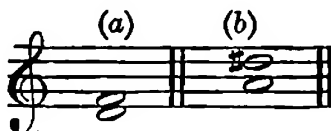
NO. OF SEMITONES	SECONDS		THIRDS		FOURTHS	
	MINOR	MAJOR 2	MINOR 3	MAJOR 4	PERFECT 5	AUGMENTED 6



FIFTHS		SIXTHS		SEVENTHS		OCTAVE
DIMINISHED 6	PERFECT 7	MINOR 8	MAJOR 9	MINOR 10	MAJOR 11	PERFECT 12



190. To find the exact name of any interval proceed as follows. First see how many *degrees of the staff* are included ; then count the number of semitones.



(a) Includes D, E, F ; it is a *third*, therefore, because there are *three* degrees. Now count the semitones thus : D to D \sharp = 1 ; to E = 2 ; to F = 3, therefore it is a *minor third*.

¹ It must not be supposed that all the intervals in this table occur in the *same* diatonic scale, though they all occur in *some* diatonic scales.

(b) Includes A, B, C, D; it is a *fourth* because there are *four* degrees. Counting the semitones we get A to A \sharp = 1; to B = 2; to C = 3; to C \sharp = 4; to D = 5; to D \sharp = 6; *i.e.* it is the *augmented fourth*.

The result obtained by the above method may be tested as follows:—

190 (a) The intervals from the tonic up to each note of every major scale are either *major* or *perfect*, *i.e.* the 2nd, 3rd, 6th, and 7th, are *major*; 4th, 5th, and 8th are *perfect*. Thus in the key of C:



Refer any interval to the *major scale* which has the lower note of the interval for tonic; thus in § 190:

(a) D–F is referred to the major scale of D. If this were in D major, D to F \sharp would be the *major 3rd*, and since D to F \natural is one semitone smaller, it must be a *minor third*.

(b) A–D \sharp is referred to A major. A to D \sharp would be the *perfect fourth*, and as A to D \sharp is one semitone larger it must be the *augmented fourth*.

EXERCISES.

(1) Write underneath each of the following intervals its exact name:

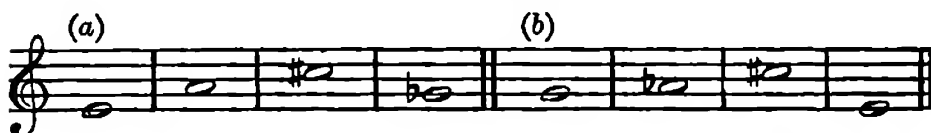


(2) To (a) add a *perfect 5th* above each note; to (b) add a *minor 6th* above:

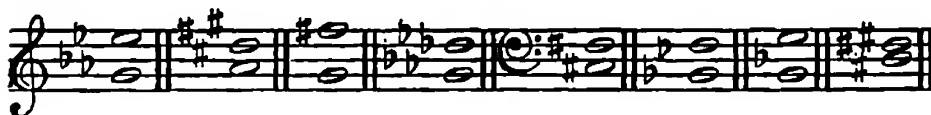


(3) What two differently named intervals of the major scale contain the same number of semitones? Write them in the key of F and give their exact names.

(4) Write above each note of (a) a *diminished fifth*; above each note of (b) an *augmented fourth*:



(5) Write underneath each of the following intervals its exact name:



(6) Write the *harmonic* minor scale of A, and point out between what notes the interval of the *augmented fourth* occurs.

CHAPTER XVII.

CHROMATIC INTERVALS.

191. Chromatic intervals can only occur in a *chromatic scale* (§ 174), or in the Harmonic form of a minor scale.

192. The chromatic intervals are obtained by chromatically (§161) raising or lowering one of the notes of a diatonic interval.

Intervals so altered are called either *augmented* or *diminished*.

193. When a *major* or a *perfect interval* is increased it is called an *augmented interval*.

FIG. 86.

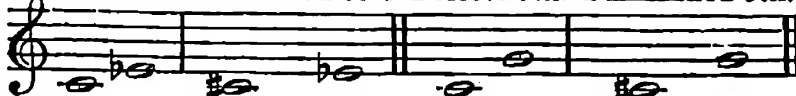
Major 2nd. Augmented 2nd. Perfect 5th. Augmented 5th.



194. When a *minor* or a *perfect interval* is lessened it is called a *diminished interval*.

FIG. 87.

Minor 3rd. Diminished 3rd. Perfect 5th. Diminished 5th.



It should be noted that an interval may be *augmented* by raising the upper note or by lowering the lower; similarly, an interval may be *diminished* by raising the lower note or by lowering the upper, *e.g.* :

FIG. 88.



(a) Is diminished by raising the C to C \sharp .

(b) Is diminished by lowering Eb to Ebb.

195. All *augmented* and *diminished* intervals are *chromatic* except the augmented fourth¹ and the diminished fifth¹ (§ 187) which can occur in diatonic scales.

196. Theoretically all intervals may become *diminished* or *augmented*, but only the following are used in harmony :

Intervals which can be *augmented* : 2nds and 6ths.

Intervals which can be *diminished* : 8rds and 7ths.

Intervals which can be both *augmented* and *diminished* : 4ths and 5ths.

197. Table of Diatonic and Chromatic intervals :

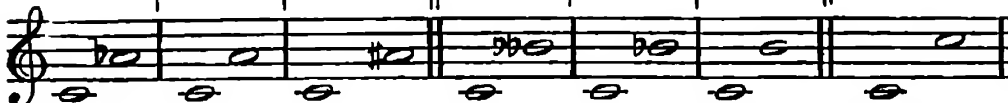
UNISONS ²			SECONDS		
NO. OF SEMITONES	PERF. 0	AUGM. 1	MINOR 1	MAJOR 2	AUGM. 3
	C	C \sharp	C	C	C \sharp
	D	D	D	D	D \sharp
	E	E	E	E	E
	F	F	F	F	F \sharp
	G	G	G	G	G
	A	A	A	A	A \sharp
	B	B	B	B	B

THIRDS			FOURTHS			FIFTHS		
DIMIN. 2	MINOR 3	MAJOR 4	DIMIN. 4	PERF. 5	AUGM. 6	DIMIN. 6	PERF. 7	AUGM. 8
C	C	C	C	C	C	C	C	C
D	D	D	D	D	D	D	D	D
E	E	E	E	E	E	E	E	E
F	F	F	F	F	F	F	F	F
G	G	G	G	G	G	G	G	G
A	A	A	A	A	A	A	A	A
B	B	B	B	B	B	B	B	B

¹ The augmented 4th and diminished 5th may be either diatonic or chromatic according to the key in which they occur. Thus if, in the key of C, F is made sharp by an accidental and there is no modulation, C to F \sharp would be in the chromatic scale of C, and therefore a chromatic interval. But if the same interval occurs in G it is clearly diatonic, because, in the key of G, F \sharp is part of the diatonic scale.

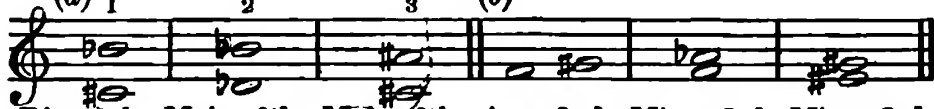
² The unison, i.e. two notes of the same name, is not, strictly speaking, an interval, but it is usually included in a scheme of intervals.

SIXTHS			SEVENTHS			OCTAVE
MINOR	MAJOR	AUGM.	DIMIN.	MINOR	MAJOR	PERF.
8	9	10	9	10	11	12



198. Either of the notes forming a *chromatic interval* may be enharmonically altered, *i.e.* altered in name but not in pitch (§ 167). Such alteration changes the *name* of the interval and makes it *diatonic*.

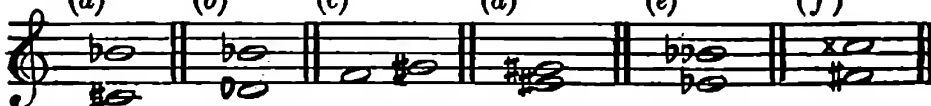
FIG. 89.



Dim. 7th. Major 6th. Major 6th. Aug. 2nd. Minor 3rd. Minor 3rd.

The three intervals at (a) are all alike in pitch; the first is the chromatic diminished 7th; by writing Bb for $C\sharp$ we get a major 6th (2); by keeping $C\sharp$ and writing $A\sharp$ for Bb we again get a major 6th. Similarly the three at (b) are all alike in pitch but different in name.

199. Further examples of naming intervals [§ 190 (a).]



(a) $C\sharp$ to Bb is referred to the scale of $C\sharp$; $C\sharp$ to $B\sharp$ is a major 7th; $C\sharp$ to Bb is two semitones smaller, therefore *diminished 7th*.

Or thus: If C were natural we should refer to C major, when $C\sharp$ - $B\sharp$ is a major 7th; $C\sharp$ - Bb a minor 7th; $C\sharp$ - Bb is one semitone smaller than minor; therefore *diminished 7th*.

(b) Db - Bb referred to scale of Db . The interval is the *major 6th*.

(c) F - $G\sharp$ referred to scale of F ; F to $G\sharp$ would be major 2nd; this is one semitone larger; therefore an *augmented 2nd*.

(d) E \sharp -G \sharp . As there is no scale beginning on E \sharp refer to scale of E ; E to G \sharp major 3rd ; therefore E \sharp to G \sharp is a *minor* 3rd.

(e) E♭-B♭ referred to scale of E♭; E♭ to B♭ is perfect 5th. This is one semitone smaller; therefore *diminished 5th*.

(f) $F\sharp-Cx$ referred to scale of $F\sharp$. $F\sharp$ to $C\sharp$ is a perfect 5th. This is one semitone larger; therefore an augmented 5th.

EXERCISES.

1. Add to (a) an augmented 2nd above; to (b) a diminished 7th.

- 2. Name the following intervals:**

A single staff of handwritten musical notation. It begins with a treble clef and a key signature of one flat (B-flat). The notation includes several measures with notes, rests, and accidentals (sharps, flats, naturals). The handwriting is somewhat informal and includes some corrections or erasures.

8. Name the following intervals; change one of the notes enharmonically and then name the interval:

4. Copy each of the following notes and add *above* each a diminished 5th, *below* each a diminished 3rd.

[illegible]

CHAPTER XVIII.

INVERSION OF INTERVALS.

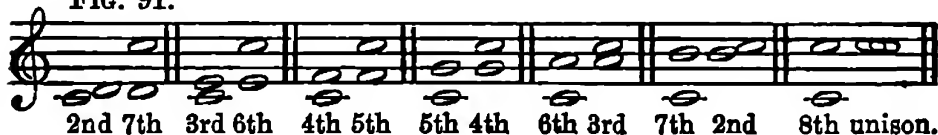
200. When the lower note of an interval is placed above the upper, or, *vice versa*, the interval is said to be inverted.

FIG. 90.

Interval. Inversion. Interval. Inversion. Interval. Inversion.

201. The numerical name of an interval subtracted from the number *nine* always gives the numerical name of the *inversion*, e.g. a 3rd becomes a 6th ($9-3$); a 4th becomes a 5th.

FIG. 91.



The interval and its inversion together make up an *octave*, i.e. eight degrees, but one note of the interval is counted twice, e.g. C to D and D to C; therefore the total number is nine.

202. Most intervals when inverted change their quality.

{	Major	inverted	becomes	minor.
	Minor	„	„	major.
	Augmented	inverted	becomes	diminished.
	Diminished	„	„	augmented.

But perfect „ remains perfect.

If we examine fig. 91 we shall see this: *major* 2nd becomes *minor* 7th, &c., *perfect* 4th becomes *perfect* 5th.

203. Consonance and dissonance.

A **consonant** interval is a combination of two notes which sounds complete and satisfactory in itself.

If we play the following intervals on the piano we notice the completeness.

FIG. 92.



A **dissonant** interval is one which sounds incomplete and unfinished; it requires other notes to follow it, to make a satisfactory effect.

FIG. 93.



If we play these intervals the incompleteness is evident. They require to be followed by other notes to complete them, as shown in figure below; this is called **resolving** the dissonances.

FIG. 94.



204. The *consonant* intervals are perfect unisons and octaves, perfect fifths, perfect fourths, major and minor thirds, major and minor sixths.

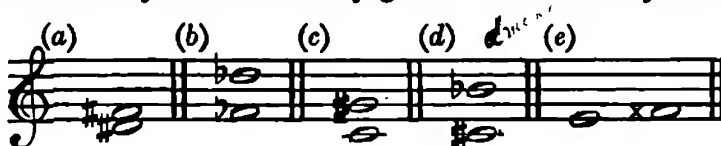
Major or minor 2nds, or 7ths, and all augmented and diminished intervals, are dissonant.

The *consonant intervals* are subdivided into *perfect consonances* (unison, octave, perfect 4th and 5th), and *imperfect consonances* (major and minor 3rd and 6ths).

205. The *perfect* intervals cannot be made larger or smaller without becoming *dissonant*; the major 3rd and 6th can be changed to minor and *vice versa*, and still remain consonant. This is one difference between perfect intervals and others (*v.* also § 202).

206. In using intervals it is important that the student should know in what key or keys they may occur. The following examples will show the method to be pursued. Bear in mind throughout the signatures of the major and minor keys (§ 133) and the order in which the sharps and flats are added.

To find the keys in which any given intervals may occur :



(a) This evidently occurs in a key with sharps. F# is the first added sharp; D# is the fourth (F#, C#, G#, D#). The interval then occurs in four sharps (E major). It could also occur in keys with more than four sharps, *e.g.* in B, F#, and C# major.

Since D# is the raised 7th of the harmonic minor scale on E (§ 124), it is clear this interval might occur in E minor also.

(b) This must be in a key with flats. The order in which flats are added is Bb, Eb, Ab, Db, Gb, Cb, Fb. This interval containing Fb, then, can only occur in seven flats in Cb major, and in its relative minor (§ 128).

(c) G# being the third added sharp suggests three sharps (A major); but C# cannot occur in A major. The G# must then be the raised seventh of A minor and the key is A minor.

This interval is the *augmented fifth*, and it occurs on the *mediant* of every minor scale (harmonic form). Here are examples of the *augmented fifth* in other keys:



(d) Bb suggests one flat (F major). C# cannot occur in F major. C# is the raised seventh of D minor, the relative minor of F.

(e) A double sharp never occurs in a signature; it can only occur as the *raised seventh* of a minor scale, and as the tonic is one semitone above the raised seventh the key is G# minor.

EXERCISES.

1. Give the name of each of the following intervals; then write the inversion and name of inversion.



2. In what key or keys can each of the following intervals occur?



3. Write the following interval in every major and minor key in which it could occur, giving key signatures:



4. In what form of the minor scale can the augmented 5th and the diminished 7th occur, and between what notes?

CHAPTER XIX.

TRANSPOSITION.

207. It is sometimes necessary to alter the pitch of a piece of music. A melody in a given key may be rewritten in a *higher* or a *lower* key. This is called **transposition**.

• RULES FOR TRANSPOSING.

208. I. *When there are no accidentals.*

(a) Write the new key-signature.

(b) See whether the new key is higher or lower than the old one ; then find out by what *interval* it is higher or lower.

It is only necessary to ascertain the *numerical name* of the *interval*, not whether it is major, minor, &c.

This will be done by comparing the *tonics*¹ of the two keys, e.g. to transpose a melody in F to the key of A. A is a third above F.

(c) Raise or lower each separate note the required interval.

Example:—Transpose the following melody into the key of G :—

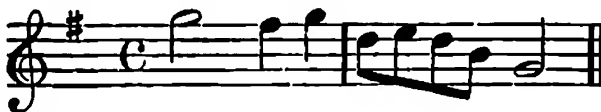


(a) The new key is G major, i.e. one sharp signature.

(b) G major is a fourth higher than D major (the original key).

(c) Every note must therefore be raised a fourth.

The melody then stands as below :—



209. II. *When there are accidentals.*

Proceed first as if there were no accidentals (by § 208), and put them in afterwards, on the following plan :—

¹ Unless otherwise stated, that tonic of the new key which is nearest to the old tonic is meant : thus in F to A, the A a third *above* F is meant, not a sixth *below*.

(a) Examine separately each accidental in the original: notice whether the accidental *raises* or *lowers* the note from its condition according to the key-signature.

(b) Then add an accidental, which will produce the same effect, taking into account the new key-signature.

EXAMPLE 1.

Transpose the following into the key of E major:



Proceeding as in § 208, the new key (E) has *four sharps* for signature, and it is a *second lower* than the original F. Each note must then be written a *second* (i.e. *one note*) lower, leaving out accidentals.

To add accidentals:

(1) The B is *flat* by the signature; the *natural* raises it a semitone. The corresponding note in the transposed melody is *natural* according to the signature; to *raise* it a sharp is necessary.

(2) The *flat* here restores the B to its original state; to restore the A♯ to its original state a *natural* is wanted.

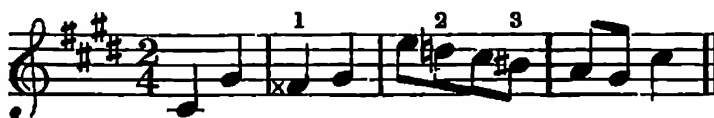
(3) Eb is *lowered* a semitone from the signature. In the transposed melody D is *sharp* according to the signature; to lower it a *natural* is wanted.

(4). In C♯ the *sharp* raises the note a semitone; a sharp similarly raises B.



EXAMPLE 2.

Transpose the following into F minor:



This is in C♯ minor; the new key F minor has four flats for signature, and F is a *fourth higher* than C.

To add Accidentals.

(1) F according to the signature is *sharp*; the *double sharp* (x) then

merely raises it a semitone. In the transposed melody the corresponding note (B) is flat by the signature; a *natural* will raise it a semitone.

(2) The *natural* lowers D (sharp by the signature) a semitone; the corresponding note (G) is *natural* by the signature, and will require a flat to lower it.

(3) The *sharp* raises B a semitone; the *natural* raises E (which is flat by the signature).



EXERCISES.

1. Transpose the following melody (a) into A \flat , (b) into G, (c) into B, (d) a minor third¹ lower.



2. Transpose (a) into D; (b) into A; (c) into E \flat .



3. Transpose (a) into C; (b) into B \flat ; (c) into D.



4. Transpose (a) into E minor; (b) into C minor; (c) into F \sharp minor; (d) a *major third* higher:





¹ In cases of this kind proceed as follows: The melody is in E \flat ; the new tonic will be a *minor third* lower, i.e. C. The question then means transpose into C.

5. Transpose the following into the key of F major :

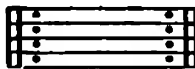


CHAPTER XX.

DOTS, ABBREVIATIONS, ETC.

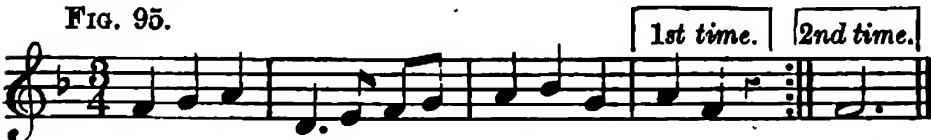
210. Dots placed to the *left* of a double-bar (§ 42) mean that the music is to be repeated, either from the beginning of the piece, or from a previous double bar,  or 

When the repetition is from a previous double-bar, dots are often placed to the *right* of that double-bar :




211. Sometimes, in repeating, a different ending is necessary for the second time. This is indicated by marking the endings *1st time*, *2nd time*, or simply 1, 2, or *Prima volta*, *Seconda volta*.

FIG. 95.



The first time we play to the double-bar and repeat ; this time we omit the bar marked *1st time* and play in its stead the bar marked *2nd time*.

212. *Da Capo* (= *from the beginning*) or *D. C.* placed at the end of a piece means that we are to begin again *from the beginning*, and to continue until we reach a double-bar marked by the sign  called a *pause*, or by the word *Fine* (= *end*).

When such a repetition is not absolutely from the beginning a sign \S indicates the exact note from which the repeat is to be made. The words to denote repeat in this case are **Da Capo al Segno** or **Dal Segno** (= *from the sign*); or simply the sign \S is used.

213. When a short passage (a few bars) occurring in the middle of a section has to be repeated it is enclosed in a bracket or a slur, and the word **bis** (=twice) is written.

FIG. 96.



214. The sign \frown called a pause is used in two ways.

(a) Placed over a *note* or a *rest*, it means that the note or rest is to be prolonged beyond its written value.

When the pause is to be very long the words *lunga pausa* are written. In all cases the length of a pause depends on the taste of the performer.

(b) A pause placed over a double-bar denotes the final end of a piece which has been repeated (§ 212).

FIG. 97.



215. The **slur** \smile used with two (or more) notes of the same pitch means that the second is not to be struck, but that the two are to be sustained without break, just as if their total length were written in one note (§ 93).

In this case the *slur* is often called a *tie*.

The slur used with notes of different pitch means that they are to be played as *smoothly* as possible, one note following another without break.

This smooth way of playing is called *legato*, and when a whole passage is to be played so the word *legato* is used with or without slurs.

FIG. 98.



In music for the voice the *slur* means that the notes so joined are to be sung to *one* syllable. In instruments like the violin each group of notes slurred is played with the same stroke of the bow.

When notes are slurred in *twos* the second of each pair is made slightly shorter than its real value in order to show the grouping more definitely by separating each group of two from its neighbours. The first note of such a pair is accented slightly.



216. The word *staccato* means that the notes are to be played short and crisp, and well separated from each other. This is indicated by dashes (′ ′) or by dots (. .) placed over the notes. When *dashes* are used the notes are to be played as *staccato* as possible (a); *Dots* (b) indicate a moderate staccato, sometimes called *mezzo-staccato* (*mezzo* = half). A third degree of staccato is marked by *slurs and dots*; this indicates a staccato less marked than when dots alone are used (c).

On instruments like the violin this staccato (c) means that each group so marked is to be played with the same up or down bow, with a fresh impulse for each note but *without the bow being taken off the strings*.

FIG. 100.



216 (a). When the staccato is long-continued, the first bar only is marked, and the word *simili* (= *similarly*) is added.

217. The sign = or = placed over a note or notes means that each note is to be held its full length, and is to be played with a firm but gentle pressure.

218. *8va* (*ottava alta*) written over a passage means that each note must be played an octave *higher* than it is written.

The continuance of *8va* is shown by dots, or by a wavy line. When *8va* is to be contradicted, and the notes played as written, the word *loco* (= *in the place, i.e. as written*) is added.

FIG. 101.



219. *8va* (*ottava bassa* or *ottava sotto*) used *below* a passage means that each note is to be played an octave lower than written.

Sometimes the figure 8 (*not 8va*) is placed *over* or *under* a note. It means that the octave above or below is to be played *with the note*, i.e. in octaves. This is sometimes indicated by *con 8va* (*con* = with).

FIG. 102. Written Played



220. When the same note is reiterated, e.g.



it may be abbreviated thus: In such cases the note

representing the *total* value of the reiterated notes is written, and the sub-divisions are indicated by a stroke or strokes written through the stem, or in case of a semibreve over the note.

FIG. 103.



(a) A *semibreve* (= 8 quavers) is divided into *quavers*; (b) a *minim* (= 8 semiquavers) is divided into *semiquavers*; (c) *crotchets* (= 2 quavers) divided into quavers; (d) *dotted crotchets* (= 6 semiquavers) divided into *semiquavers*.

FIG. 104. (e)

Written 

Played 

Written 

Played 

When as at (e) a group consists of *two* notes it requires two notes to write it, but the total value in all such cases is only *one* of the notes, *i.e.* bars 1 and 2, each equal one *minim* in length; bar 3 equals one *semibreve*.

221. When notes are to be repeated very quickly indeed the word **tremolo** or **tremolando** is written, and generally as many repetitions as can be got in the time of the note are played.

The manner of playing the *tremolo* on the pianoforte and violin is shown below.

FIG. 105. *Tremolo* *Tremolo*

Written 

Violin *Tremolo* *Pianoforte*

Played 

Written 

Pianoforte.

Played 

222. Repetitions of groups of notes are shown by writing —, or =, or \cdot , or by the use of the word *simili* [§ 216(a)].

FIG. 106.



223. The notes of a *chord*, i.e. a combination of several notes sounded together, are usually struck all at the same time. A chord is then said to be a *firm chord*. If a chord has a *wavy line* or a *curve* at its left side, the notes are to be played as quickly as possible one after the other, beginning with the lowest. This is called an *arpeggio*, because on a harp (Italian *arpa*) chords are so played.

Sometimes the notes are written as they are to be played, as at (b).

FIG. 107.



EXERCISES.

1. Explain the following terms : *bis*, *simili*, *lunga pausa*, *dal segno*, *mezzo-staccato*.

3. Rewrite the following passages as they are to be played.



3. Express in abbreviated form, using the note G:

- (a) 6 quavers; (b) 8 semiquavers; (c) 16 semiquavers;
(d) 16 quavers; (e) 12 semiquavers; (f) 8 demisemiquavers.

4. Write out in full the following abbreviation :



5. Write two bars of music, using signs to make one bar staccato and the other legato.

CHAPTER XXI.

GRACE NOTES.

224. A melody may be ornamented by the addition of *grace notes*. The chief grace notes used in modern music are the *appoggiatura*, *acciaccatura*, *turn*, *shake*, *mordent*.

225. The *appoggiatura* (from *appoggiare*, to lean upon) is written as a small note before a principal note. It takes its time from the principal note, and is usually *half* the length of an undotted note, *two-thirds* the length of a dotted note.

Appoggiatura means the note leaned upon, and therefore it always takes the accent instead of the principal note. It should be written as a crotchet, quaver, &c., according to its length.

FIG. 108.

* *

Written	
Played	
Written	
Played	

In modern music the *appoggiatura* is almost always written as an ordinary large note.

226. The *acciaccatura* (from *acciaccare*, to crush) is written as

a small note with a stroke through its stem (♯). It should be played just *before* the principal note, but as close to it as possible.

The principal note—not the acciaccatura—takes the accent.



227. When an acciaccatura is a semitone *below* a note it is sometimes called a beat.



228. Several grace notes played before a principal note are sometimes called a *double appoggiatura*. They are played as quickly as possible, never take the accent and take their time from the previous note or beat.



229. The **turn** consists of a principal note with the note above and the note below.

When the note above the principal note comes first, the *turn* is said to be direct, and the sign for it is ~.



230. The **inverted turn** (written ?) has the note below the principal note first.



The notes of the turn will be according to the key in which they occur. If it is necessary to modify this, accidentals are written above or below. Thus, a turn with a sharp below it means that the lower note is to be made sharp, &c.

FIG. 109.

Written	
Played	

231. When the principal note is to be played before the turn begins, the sign ought to be placed a little to the right (a). If a turn occurs on a dotted note, the principal note is first played, and the turn is made to terminate with the principal note on the dot (b). The speed of the turn will depend on the character of the music.

When a turn stands immediately *over* a note, it should begin with the note above the principal note, and then the turn will consist of four notes, played in the time of the note over which the turn is written (c).

FIG. 110.







232. The *shake* (or *trill*) consists of a principal note, and the note above it rapidly alternated. It is written " or " ~~~~. Generally the principal note comes first. When the upper note is to come first it is usually indicated in modern music by a small note (*appoggiatura*) (b).

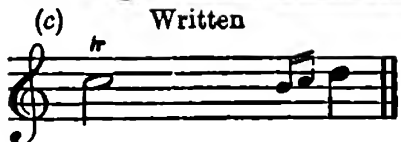

Before the last recurrence of the principal note, the note below is often taken, thus forming a *turn* at the end of the shake. This is indicated in modern music by two small notes as at (c), and, as a rule, a shake should only end with a turn when these small notes are written.

The length of the shake is the value of the principal note, as many notes being played as can be got distinctly in the time.

FIG. 111.

(a) *Written*  *Played* 

(b) *Written*  *Played* 



(c) *Written*  *Played* 

As in the case of a turn, the note above the principal note may have an accidental which is written above the sign for the shake, e.g. \sharp_r .

233. A shake may occur in two (or three) notes at the same time. This is a double (or triple) shake.

Sometimes a series of shakes occurs on notes following each other step-wise. When the series ascends each shake will finish with a turn.

234. The *mordent*,¹ written w , consists of a principal note, and the note above taken *once* very rapidly, and followed by the principal note.

Written  *Played* 

235. An *inverted mordent* (ψ) has the principal note and the note below.

Written  *Played* 

EXERCISES.

1. Explain clearly, with examples, the difference between *appoggiatura* and *acciaccatura*.

2. Write in full each of the following ornaments as it is played:

¹ In Germany the sign w is called *praller* or *pralltriller*, while ψ is called a *mordent*. The signs, however, are interpreted as in §§ 234-5, so that the difference is merely in the names.



CHAPTER XXII.

MUSICAL TERMS.

286. Many words, mostly Italian, are used to indicate pace, force, style, &c.

297. I. Terms denoting pace (beginning with the slowest, and going upwards to the quickest):

<i>Grave</i>	.	.	.	.	very slow.
<i>Adagio</i>	.	.	.	.	slowly, leisurely.
{ <i>Largo</i>	.	.	.	.	slow.
{ <i>Larghetto</i> ¹	.	.	.	.	rather slow.
<i>Lento</i>	.	.	.	.	slow.
{ <i>Andante</i>	.	.	.	.	going, slow but graceful.
{ <i>Andantino</i> ¹	.	.	.	.	rather slower ² than <i>Andante</i> .
<i>Moderato</i>	.	.	.	.	moderate.
{ <i>Allegro</i>	.	.	.	.	merry and fast.
{ <i>Allegretto</i>	.	.	.	.	not so fast as <i>Allegro</i> .
{ <i>Presto</i>	.	.	.	.	fast.
{ <i>Prestissimo</i> ³	.	.	.	.	very fast.
{ <i>Tempo comodo</i>	.	.	.	.	at a convenient pace.
{ <i>Tempo giusto</i>	.	.	.	.	in exact time.
{ <i>Tempo ordinario</i>	.	.	.	.	in ordinary time.

Some of these words also convey an idea of style as well as of pace. Thus *largo* means not only slow, but also broad, large in style.

¹ The ending *-etto* or *-ino* is called a diminutive, and it diminishes the force of the meaning of a word to which it is applied, e.g. *larghetto* is not so slow as *largo*; *allegretto* not so quick as *allegro*.

² Unfortunately there are two exactly opposite meanings attached to *andantino*. As *andante* means "going," *andantino* should mean *less going*, i.e. not so fast as *andante*. Some composers, however, taking *andante* as meaning *slow*, make *andantino* mean *less slow*, i.e. faster than *andante*.

³ The ending *-issimo* is a superlative, and corresponds to our word *most* or *very*.

These words usually apply to a whole movement or section, and they are to be considered in force until contradicted by some other term.

298. II. Terms denoting a temporary alteration in pace :

<i>Accelerando</i> or <i>accel.</i>	.	.	increasing the pace.
<i>Ad libitum</i> or <i>ad lib.</i>	.	.	} at pleasure.
<i>A piacere</i>	.	.	
<i>A tempo</i>	.	.	} after a modification to return to original time.
<i>Tempo primo</i>	.	.	
<i>Calando</i> ¹	.	.	decreasing the pace.
<i>Rallentando</i> or <i>rall.</i>	.	.	} gradually slower.
<i>Ritardando</i> or <i>rit.</i>	.	.	
<i>Slentando</i>	.	.	
<i>Stringendo</i>	.	.	pressing or hurrying the pace.
<i>L'istesso tempo</i>	.	.	at the same pace ; used when

there is a change of time, *e.g.* $\frac{2}{4}$ to $\frac{6}{8}$; it means that the *beat* in the new time is to be just the same as the beat in the previous time ; *i.e.* the dotted crotchet of $\frac{6}{8}$ to be the same length as the crotchet of the $\frac{2}{4}$.

299. III. Terms relating to degrees of loudness, softness, or force :

<i>Piano, p</i>	.	.	soft.
<i>Mezzo piano, mp</i>	.	.	moderately soft.
<i>Pianissimo, pp</i>	.	.	very soft.
<i>Forte, f</i>	.	.	loud.
<i>Mezzo forte, mf</i>	.	.	moderately loud.
<i>Fortissimo, ff</i>	.	.	very loud.
<i>fp</i>	.	.	loud and then soft immediately.
<i>Crescendo, cres.</i> or <	.	.	} gradually louder. increasing in loudness.
<i>Decrescendo, decres. ;</i> <i>Diminuendo, dim.</i> >	.	.	
<i>Morendo</i>	.	.	} gradually softer ; dying away.
<i>Perdendosi</i>	.	.	
<i>Dolce</i>	.	.	softly, gently, sweetly.
<i>Sforzando, sf, > or ^</i>	.	.	} strongly accented or emphasised.
<i>Forzato, fz</i>	.	.	
<i>Sforzato, sf</i>	.	.	

240. IV. Terms relating to style. The words marked * are used with others to form phrases.

¹ *Calando* also implies gradually more softly.

<i>Affetuoso</i>	. . . .	with feeling.
<i>Agitato</i>	. . . .	agitated.
<i>Alla or all'</i>	. . . .	like, according to.
<i>e.g., alla marcia, alla breve.</i>		
<i>Amoroso</i>	. . . .	lovingly.
<i>Animato or con anima</i>	. . . .	animated.
<i>Appassionato</i>	. . . .	impassioned.
<i>*Assai</i>	. . . .	enough or very.
<i>e.g., Allegro assai.</i>		
<i>*Ben (e.g., ben marcato)</i>	. . . .	well.
<i>Brillante</i>	. . . .	brilliantly.
<i>Cantabile</i>	. . . .	in a singing style.
<i>Colla voce</i>	. . . .	with the voice part.
<i>Comodo</i>	. . . .	convenient, without haste.
<i>*Con</i>	. . . .	with.
<i>Con brio</i>	. . . .	with spirit.
<i>Con energia</i>	. . . .	with energy.
<i>Con espressione</i>	. . . .	with expression.
<i>Con forza</i>	. . . .	with emphasis.
<i>Con fuoco</i>	. . . .	with fire.
<i>Con grazia</i>	. . . .	gracefully.
<i>Con moto</i>	. . . .	with movement, spirited.
<i>Con spirito</i>	. . . .	in a spirited manner, lively.
<i>Con tenerezza</i>	. . . .	with tenderness.
<i>Dolente</i>	. . . .	in a plaintive style.
<i>Espressivo</i>	. . . .	full of expression.
<i>Grazioso</i>	. . . .	gracefully.
<i>Legato</i>	. . . .	smoothly.
<i>Leggiero</i>	. . . .	lightly.
<i>*Ma</i>	. . . .	but.
<i>e.g., ma non troppo</i>	. . . .	but not too much.
<i>Maestoso</i>	. . . .	majestically.
<i>Marcato</i>	. . . .	well marked, emphasised.
<i>Marziale</i>	. . . .	like a march.
<i>*Meno</i>	. . . .	less.
<i>*Mezzo</i>	. . . .	half.
<i>Mezzo voce</i>	. . . .	with half the power of the voice.
<i>Mosso</i>	. . . .	moved.
<i>*Molto</i>	. . . .	much, very.
<i>*Non</i>	. . . .	not.
<i>Pesante</i>	. . . .	heavily, each note to be played
with great firmness, but not staccato.		
<i>*Più</i>	. . . .	more.
<i>*Poco</i>	. . . .	little.
<i>Poco a poco</i>	. . . .	little by little, gradually.

* <i>Quasi</i>	as if, like.
<i>Risoluto</i>	boldly.
<i>Scherzando</i>	lightly, playfully.
<i>Tanto</i>	so much.
<i>Troppo</i>	too much.
<i>Segue</i>	placed at the end of a movement
means that the next movement is to follow without break.	
* <i>Sempre</i>	always, throughout.
* <i>Senza</i>	without.
<i>Smorzando</i>	fading away.
<i>Soave</i>	delicately.
<i>Solo</i>	a part performed by one person.
<i>Sotto voce</i>	subdued in tone.
<i>Sostenuto</i> (applied to a passage)	each note held its full length.
<i>Tempo rubato</i>	lit. <i>robbed time</i> , means—(a) not
in strict time, i.e., occasionally accelerating or retarding	
the pace for the purpose of <i>expression</i> . (b) The effect of	
a change of time caused by change of accent (§ 84).	
<i>Tenuto</i> or <i>ten</i> (applied to a	
single note)	to be sustained its full length.
<i>Tutti</i>	to be performed by full band or
chorus (v. <i>solo</i>).	
* <i>Vivace</i>	lively.
<i>Vivo</i>	briskly.

241. V. Terms applying to pianoforte technique.

Sometimes it is necessary to indicate which hand shall be used for certain notes. This is done by using **R. H.** (*right hand*), or **M. D.** (*main droite*, French; *mano destra*, Italian), for the **right hand**; and **L. H.** (*left hand*), **M. G.** (*main gauche*), or **M. S.** (*mano sinistra*), for the **left hand**.

242. Pedals.—Modern pianos have two pedals—the **right pedal** or **sustaining pedal**, the **left pedal** or **soft pedal**.

The use of the **right pedal** is indicated by the word **ped.**, and the pedal is kept down until the sign * or ⊕ is reached.

The strings corresponding to each note of the piano (except the highest octaves) are touched by an arrangement for deadening the sound, called a **dampers**. When a note is struck the same action raises the *dampers*, thus allowing the strings to vibrate freely, and when the note is left the *dampers* falls on the strings and stops their vibration. The *right pedal* raises all the *dampers* in the piano at once, and thus allows full and free vibration after a note is left (§ 157).

These *dampers* are called *sordini* (= mutes), and we sometimes find *senza sordini* (= without dampers) when the dampers are to be raised, *i.e. ped.*, and *con sordini* (= with dampers) when the dampers are to be lowered, *i.e. ** or \oplus , *v. Beethoven's Sonata XIV., first movement.*

243. The use of the left pedal is indicated by the words *una corda* (= one string), and the pedal is to be kept down until the words *tre corde* (= three strings) are reached.

To most of the notes of a piano there are three strings (all of the same pitch) to increase the volume of tone. The action of the left pedal is to move the hammers in such a way that only *one* string is struck. This, of course, diminishes the loudness of each note. Instead of *una corda* we often find *mit Verschiebung* (= with shifting) in German music.

244. The terms for the indication of pace (§§ 237–40) can, of course, only give a rough idea of the intentions of the composer. He may, however, accurately indicate the pace by reference to a contrivance called Maelzel's **Metronome**. This is a piece of clock-work to which is attached a pendulum with a sliding weight. By moving the weight the pendulum can be made to swing more quickly or more slowly. The pendulum is graduated, and the divisions are numbered on the principle of the number of beats *per minute*. Thus, when the weight is fixed at 60, the pendulum beats 60 times in a minute; fixed at 100, the pendulum beats 100 times in a minute.

M. M. $\text{♩} = 60$ means that when the metronome weight is fixed at 60 each beat of the pendulum gives the time of a crotchet. M. M. $\text{♩} = 80$ means that fixed at 80 each beat is the time of a minim, &c.

It must not be imagined that all music marked with the same Italian word for pace would have the same metronome mark, for the Italian word is used to roughly describe many degrees of pace. The following then must only be considered as roughly indicating the possible metronome marking:
Andante M. M. $\text{♩} = 60$; *Adagio* $\text{♩} = 54$ to 50; *Moderato* $\text{♩} = 90$;
Allegro $\text{♩} = 110$ to 135; *Presto* $\text{♩} = 135$ to 160, &c.

EXERCISE.

1. Explain the following terms:—*Doppio movimento, largo, quasi, pesante, soave, maestoso, senza sordini, allegro assai.*

con moto
legato F. Schubert.

1. In what key is this?
2. Does it keep in the same key throughout?
3. For what other key does this signature stand?
4. Is the time simple or compound?
5. What signs are used here for altering the pitch of the notes?
Explain them.
6. Explain all the uses to which the *dot* (.) and the *slur* are put in this extract.
7. What does 1 2 mean?
8. Explain the following signs and terms occurring here:
con moto, *legato*, *mf*, *>*, *cres.*, *< f > p*.
9. What *clefs* are used here?
10. Transpose the extract a semitone higher.

245. The Stave.—The number of lines used for the *stave* has varied greatly at different periods, and it was not until the invention of printing that the number was fixed at *five*. In mediæval music staves with from *three* to *fifteen* lines were used. In some of these only the spaces were used; while in others the spaces were not taken into account, only the *lines* being written upon.

Even at the present time a stave of four lines is used for the *Gregorian Tones*, i.e., the traditional chants of the Early Christian Church.

In music for the *organ* there are usually three staves (of five lines each) bracketed together—two used for the notes to be played by the two hands, and the third for the part played by the feet.

246. **Names of Voices.**—Originally the part we now call *Tenor* always sang or held the melody—hence its name (from *teneo*, I hold). The part below was called *Bass*, a word meaning *low*. The part immediately above the *tenor* was called *alto*, as explained in § 22. The word *treble* means *third*, and thus it was applied to the third part above the *tenor* (compare the word *triple*). The word *soprano* means *highest*, and *mezzo-soprano* means lower than *soprano* (*v. mezzo* in § 240.)

247. **Compound Time.**—Each bar in *Compound Time* may be regarded as consisting of two, three, or four bars of *simple triple* time. Thus $\frac{6}{8}$ is compounded of two bars of $\frac{3}{8}$.






Similarly, $\frac{9}{8}$ is compounded of three bars of $\frac{3}{8}$; and $\frac{12}{8}$ is compounded of four bars of $\frac{3}{8}$.

On this principle $\frac{4}{4}$ time is always considered in Germany as compound, *i.e.*, made up of two bars of $\frac{2}{4}$.

The grouping of *bars* into equal sets or groups constitutes **Rhythm** (*see Part III.*).

248. **The Origin of the Sign *b*.**—The *B* at first used in music was only a semitone above *A*, and from this the letter *b* in time was used to denote the lowering of a note by a semitone. The letter *b* eventually was corrupted into the sign *b*. (Compare § 140.)

249. In the eighteenth and the beginning of the nineteenth centuries it was not the custom to write two of the parts of a triplet as one note, *e.g.*

. The plan was always to have *three* characters to represent the triplet, either three notes, or two notes and a rest, or two notes and a dot. Instead of  we find incorrectly . An example like (a)

below occurring in music of the period referred to must be played as at (b):

